



FRIDAY, SEPTEMBER 3.

Color Blindness on the Illinois Central Railroad

[We are indebted to Mr. E. T. Jeffery, Superintendent of the Illinois Central Railroad, for the following interesting report of the Superintending Surgeon of that road, which, it will be seen, covers the general subject of examinations for color blindness and visual power, and the extent to which examinations are now made in this country, as well as the results of the examinations made on the Illinois Central Railroad.]

Office of Superintending Surgeon, Central Railroad Company. CHICAGO, Aug. 9, 1880.

E. T. JEFFERY, Esq., General Superintendent.
DEAR SIR: Yours of June 1, 1880, in reference to the examination of employes for visual power and color perception by train masters and master mechanics, by means of red and green flags, by red and green lanterns and by different colored worsteds, received.

I must apologize for not answering sooner, but I was desirous of informing you what is being done in this country, at least in the matter in question, so that you may the better judge (1) what is required of an examiner, (2) who can best fulfill these requirements. This I have not been able to accomplish more promptly.

Importance of Examination.—In order to show you the importance of the subject you are now about to consider, I would call your attention to a part, at least, of what has transpired during the past twelve months.

Examination of Recruits by Order of Secretary of War.—By the direction of the Secretary of War, instructions with regard to the examination of the eyes of recruits have been published. At the principal recruiting depots, all accepted recruits will be examined for color-blindness by the medical officers on duty. Any visual defect will constitute a cause of rejection in the case of enlistment for the signal corps. The examination for defective color-sense will be made by the test-wools (Holmgren). (General Orders No. 82, Adjutant-General's Office).

Examination of Pilots by order of Treasury Department.—Compulsory examination of the visual power and color perception of pilots has been ordered by the Treasury Department. Persons applying for either a renewal of license, or an original license as pilots on steam vessels, shall be required to undergo a visual examination in order that it may be determined whether such persons can properly distinguish the colored lights used, or signals on steam vessels, and in future inspectors will issue pilots' licenses only upon certificates of surgeons of the United States Marine Hospital Service that applicants fulfill all the requirements of the rule referred to in the circular issued. Subsequently, in view of the expense and hardship likely to accrue to pilots living at points remote from stations of the Revenue Marine Hospital Service, in visiting such stations for the purpose of being examined for color-blindness and defective visual power, the rules and regulations were so modified as to allow pilots employed at remote places to be examined by any respectable resident physician, etc., etc. (Circular No. 14, Treasury Department.)

Boston & Hingham Co.'s Examination.—The Boston & Hingham Steamboat Company requires a thorough examination and certificate by a medical expert of the visual power and color perception of all its officers and crew who are called upon to distinguish marks, buoys and colored signals. This is in addition to the required examination of their pilots by the medical officer of the Marine Hospital Service.

Value of Compulsory Examination in Marine Hospital Service.—Surgeon-General Hamilton, of the United States Marine Hospital Service, in his report for last year, shows conclusively the value of compulsory examination of seamen in the merchant marine.

Surgeon-General P. S. Wales' Order for Examination of Persons in the Navy.—By order of Philip S. Wales, Surgeon General, U. S. N., medical officers of ships and stations are required to make careful examination of all persons in the navy as to their color-sense, etc., and report result. The method to be employed is that of Holmgren (colored worsteds). Additional tests may be employed at the option of the examiner, in which case the fact is to be so stated.

Congress Petitioned to Consider a General Law of Control.—Congress has been petitioned to take into consideration a general law of control, in the navy and merchant marine, of color-blindness and visual acuteness, and the agreement by an international commission of definite and uniform standard of testing these necessary qualifications. The petition was presented by Hon. B. W. Harris Jan. 29, 1880, and was referred to the Naval Committee, who gave a hearing to the petition March 3, 1880, and reported to Congress. The bill will come up at the next session. I will furnish you with but a single extract from the report of the Naval Committee, viz.: "Now that attention has been so generally called to these sources of danger on land and sea, European governments and railroad corporations have enacted laws and adopted rules of control." "Some railroad corporations have acted, but—as was also done in Europe—in an uncertain way, from lack of recognizing the necessity of medical experts to carry out the examination in a thorough and systematic manner."

Connecticut State Law.—The state of Connecticut has the honor of being the first to pass a law requiring examination of all railroad employes engaged in moving trains. This law concerns many thousands of railroad employes in Connecticut, as all of them have to be subjected to tests for visual defects before Oct. 1, 1880. It is a mere question of time when similar laws will be passed and enforced in all the states in this country, as is almost universally the case in Europe. The following is the law in the state of Connecticut directing the examination of railroad employes in regard to color-blindness and visual power:

"SECTION 1. The State Board of Health shall prepare rules and regulations for the examination and re-examination of railroad employes in regard to color-blindness and visual power, prescribing the method in which and the intervals at which such examinations shall be made, the maximum fee to be charged for each examination, the form of certificate to be issued by the examiners, and such other regulations as said Board may deem necessary. Said Board shall send a copy of such rules and regulations to every railroad company and trustee operating a railroad in this state, on or before the first day of July, 1880. Said Board may from time to time make such changes in said rules and regulations as they may think best, and communicate the same to said companies and trustees. Said Board shall, annually, in the month of May, recommend two or more medical experts to make the examinations above referred to, and the Governor shall annually on or before the first

day of July appoint not less than two medical experts, any one of whom shall be authorized to conduct the examinations for color-blindness and visual powers, and issue certificates in accordance with the rules of the Board of Health.

"SECTION 2. On or before the first day of October, 1880, every railroad company and trustee operating any railroad in this state shall cause every person in their employ as locomotive engineer or fireman, train conductor or brakeman, station agent, switchman, flagman, gate-tender or signalman, to be examined at the expense of the railroad company, by one of the examiners to be appointed by the Governor in regard to color-blindness and visual power, and shall cause a like examination to be made of all persons employed after said date in either of the capacities named above, and shall cause re-examinations to be made in accordance with the rules prescribed by the Board of Health.

"SECTION 3. Any railroad company or trustee operating any railroad in this state, employing, after the first day of October next (1880), in any of the capacities specified in the second section of this act, any person who does not possess a certificate of freedom from color-blindness, and possession of normal visual power, duly issued in accordance with the provisions of this act, or knowingly employing in any of such capacities any person whose certificate has been revoked by the examiners, shall for each and every offense be punished by a fine of not less than \$200 nor more than \$1,000. Approved March 25, 1880."

Permit me also to bring to your notice the rules and regulations emanating by law from the Board of Health of the state of Connecticut:

Rules and Regulations for Examination of Employes prepared by State Board of Health of Connecticut.—"RULE 1.—All railroad employes requiring examination under the law of March 25, 1880, shall be divided into two general classes. Class first shall include engineers, firemen and brakemen. Class second shall include train conductors, station agents, switchmen, flagmen, gate-tenders and signalmen.

"RULE 2.—Certificates shall be given for each position in accordance with the succeeding rules for examination. Promotion from one class to the other requires re-examination and certificate.

"RULE 3.—Re-examination shall be made:

- (a) After any diseases of the eyes.
- (b) After injuries affecting the head or eyes.
- (c) After any disease or trouble of the brain and after long-continued illness, as typhoid fever.

(d) After mistakes or acts which call in question the visual powers; also whenever directed by the Board of Health.

"RULE 4.—The examiners shall report regularly to the State Board of Health, and their work shall at any time be open to the inspection of any member or members of said Board.

"RULE 5.—The regulations for conducting the examinations and the standards for each class shall be determined by the Board of Health, and not by the examiners. New rules and regulations shall be adopted, from time to time, as required, and alterations and amendments made."

Rules for Conducting Examinations in State of Connecticut.—"RULE 1.—For the qualitative estimation of color-blindness, the following tests are to be employed: Holmgren's worsteds, the tables of Stilling, Donder's color-test patterns, Pfüger's letters with tissue papers; Däac tests and Woinow's revolving cards may also be used.

"For the quantitative test for color-blindness, Donder's reflected spots, Donder's method with transmitted light, Holmgren's shadow tests shall be employed.

"RULE 2.—The following are the requirements for the certificate in the first class:

- (a) Healthy eyes and eyelids without habitual congestion or inflammation.
- (b) Normal unobstructed visual field.
- (c) Normal visual acuteness.
- (d) Freedom from color-blindness.
- (e) Entire absence of cataract or other progressive disease of the eyes.

"The second class shall have:

- (a) Healthy eyes and eyelids, without habitual congestion or inflammation.
- (b) Unobstructed visual field.
- (c) Visual acuteness at least equal to $\frac{3}{4}$ without glasses and normal with glasses in one eye, and at least $\frac{1}{2}$ in the other with glasses.
- (d) Freedom from color-blindness in one eye, color-perception at least equal to $\frac{1}{2}$ in the other eye.

"RULE 3.—In the case of employes who have held their position five years or more, the standards required in each class shall be determined under special instructions from the Board of Health."

Examination by Red and Green Flags or Lanterns and by Non-Medical Men.—In the material that I have thus brought to your notice you will observe that in no case have red and green flags or red and green lanterns been used as tests for color-blindness, and in no case has any railroad official or non-medical man been entrusted with the examination for visual defects in this country. This applies also to England and Continental Europe.

Duty of an Examiner.—It should be the duty of an examiner to determine whether or not the examined have, or have not, healthy eyes and eyelids, without habitual congestion or inflammation, normal visual acuteness, normal visual field, color-blindness, cataract, or other progressive disease of the eyes, the state of visual power with and without glasses, etc. This, in the future, will comprise part of the work of the railroad surgeon—a kind of work that should not be entrusted to a non-medical examiner. There is much evidence in support of this, but it would unnecessarily, perhaps, prolong this letter to furnish you with it.

Flags and Lanterns.—The question of the employment of red and green flags or lanterns as tests for color-blindness still awaits an answer. Scientists, fully capable of judging of the proper tests, without any exception, that I am aware of, condemn the method of examination by flags and lanterns. My own observations in their use, though quite limited, compel me to urge you not to encourage the employment of flags and lanterns for detecting color-blindness.

The Case of an Employe Examined with Flags.—Let us take the case of an employe examined at Amboy by Dr. Travers and myself, and whom we found color-blind by Holmgren's worsteds.

Mr. W. R. Head, your personal-injury agent, who has been of great service to us in these examinations, suggested the flag test after we had, as stated, used the worsteds, in the case just referred to. Being somewhat interested to see the result I encouraged this second examination, and stood near the person examined in order to hear his answers. The day was dark and rainy. We used a building about 90 ft. in length.

Mr. Head, having secured two clean new flags, red and green, stood at one end of the building, opposite to an open door or window, in such a manner as to be unseen by the examined. Mr. Jacobs, Division Superintendent, Mr. Edams, Master of Machinery, Dr. Travers, myself and several others, together with the employe being examined, stood at the other end of the building. Mr. Jacobs conducted the examination. When the flags were exposed, I noticed that the light from the window or door fell directly upon them, and thus rendered the colors bright. The man answered correctly for a time, as the flags were exposed, and I think we would all have been willing to have stopped the examination at this stage with the result in favor of the examined, and to have reported him normal as to color perception, so far as the test by flags was concerned. The examination, however, was continued, and finally the examined person said rather hesitatingly, as the green flag was held out to him, "I should call that green." "You say 'should,'" answered Mr. Jacobs; "aint you certain of it?" "Well, yes (rather hesitatingly), I should call it green."

At this second stage the examination might well have rested, with a result in favor of the examined. I take it that a less critical non-medical examiner than Mr. Jacobs might not have given due appreciation to the word "should" in the answer noted.

I at once said to the examined: "Could you swear that that is green?"

"Oh, no," said he; "I could not swear to it."

This answer surprised us all.

Mr. Head then went outside the building, about 400 feet away, and held up a bright red flag, there being in the immediate background a tree in rich foliage. This he called a green flag. This case certainly brings us to one conclusion at least, viz.: The danger and uncertainty of the flag test.

Finally, as Connecticut has the honor of being the pioneer in this work of reform by the enactment of a state law, let me congratulate you, as the representative of the Illinois Central Railroad Company, having at heart the desire for increased security to life and property, in that you, without law, are the first in Illinois and the West to strive to eliminate such new sources of danger on railroads as are to be found under the head of visual defects.

Dr. Jeffries.—It would be a great injustice to Dr. B. Joy Jeffries, of Boston, not to recognize that to his unremitting labors is due the present status of the movement in this country. He is the Holmgren of America, and to Dr. Jeffries I am personally under many obligations for advice and notes of progress always given freely when asked for, and frequently volunteered.

Very truly yours,
(Signed) JOHN E. OWENS,
Superintending Surgeon.

RECAPITULATION OF EXAMINATION OF EMPLOYEES OF ILLINOIS CENTRAL RAILROAD FOR COLOR-BLINDNESS.
Statement of Defects found on each Division.

	Red blind or green blind.	Incompletely color-blind or have feeble sense of color.	Defects in visual power.	Other defects in vision.	Total.
Chicago Division.	14	5	10	2	37
Northern "	9	5	8	..	22
Iowa "	8	7	3	..	18
Springfield "	..	1	1
Total	31	18	27	2	78

Statement showing Total Number of Employes examined on each Division.

	Chicago Division.	Northern Division.	Iowa Division.	Springfield Division.	Total.
Engineers.....	91	42	47	8	188
Firemen.....	118	40	49	12	219
Conductors.....	65	37	35	7	144
Brakemen.....	107	58	50	12	227
Baggage-men.....	18	12	10	..	40
Yard-masters.....	8	6	5	..	19
Yard-switchmen.....	67	5	14	..	86
Switch-tenders.....	20	20
Watchmen and others.....	10	4	1	..	15
Total.....	504	213	211	39	967

Statement showing Defects in Employes with approximate Percentages of Defects.

	Red or green blind.	Feeble sense of color.	Defects in visual power.	Other defects.	Total.	Approximate percentage of defects found in eyesight.	Approximate percentage of defects in color.
Engineers.....	5	1	10	1	17	3.	6.
Firemen.....	6	5	4	1	16	5.	2.
Conductors.....	5	2	3	..	10	5.	2.
Brakemen.....	9	5	5	..	19	6.	2.
Yard-switchmen.....	5	2	4	..	11	6.	3.
Other employes.....	1	3	1	..	5	3.	2.
Total.....	31	18	27	2	78		

Approximate percentage of red or green blind..... 3.
" " " feeble color sense..... 2.
" " " defects in visual power..... 3.

(Signed) JOHN E. OWENS,
Superintending Surgeon.

Prices of Rails.

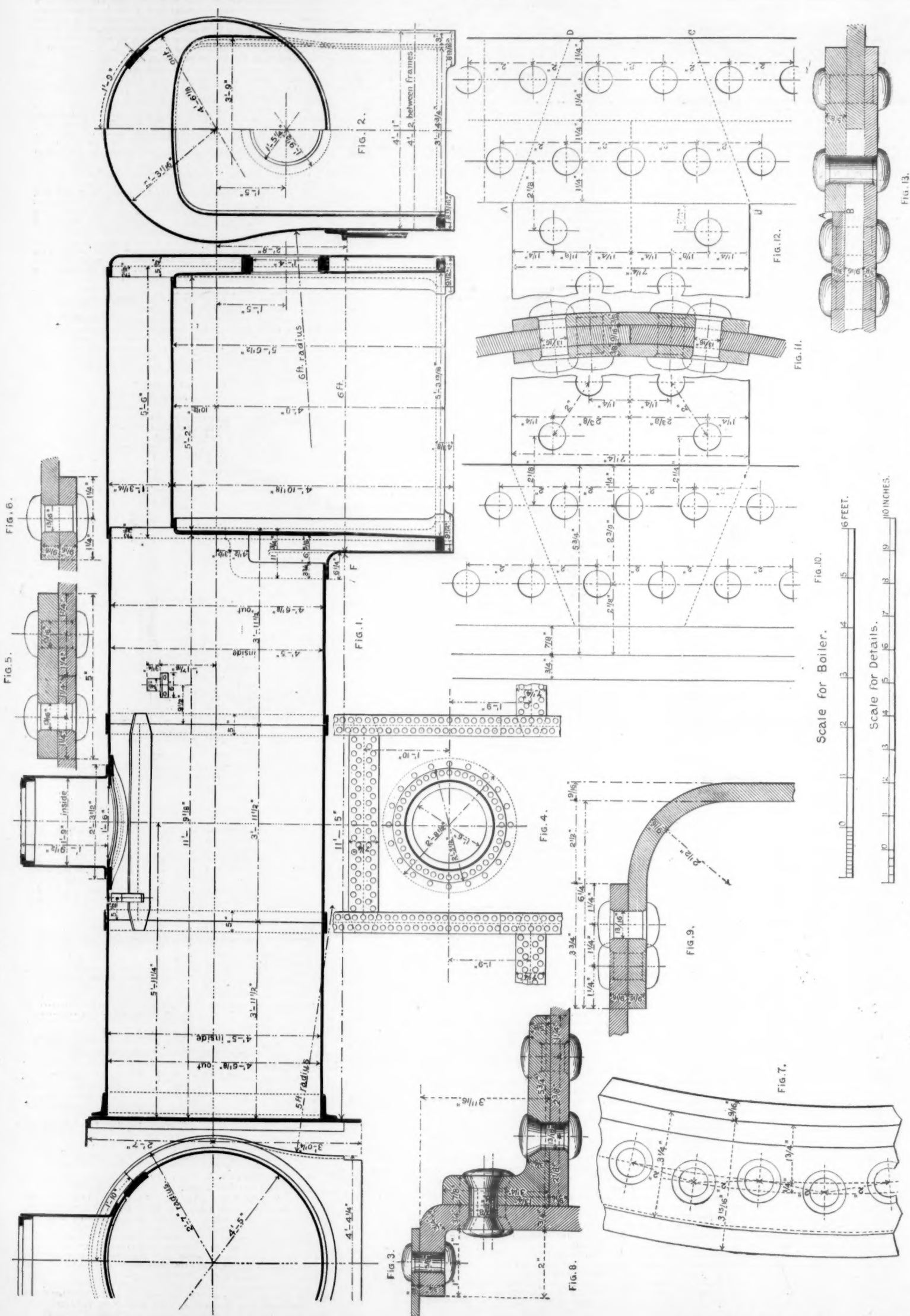
Steel rails are firm, and with very little change. Quotations are \$65 per ton at mill for immediate delivery, and \$62 to \$63 for winter or spring orders. Some large orders are reported placed for spring delivery at prices not made public.

Iron rails are active, with much inquiry, but not many actual sales. Quotations vary from \$46 to \$47 per ton at mill for 56 lbs., up to \$49 to \$50 for 25-lbs. section.

Old iron rails are held firmly at \$28 per ton in Philadelphia, but very few sales are reported, most buyers being unwilling to offer more than \$26 to \$27.

He Collected the Fare.

Doc. Boynton's train between Rock Falls and Shabbona has been run several days this week by his brother-in-law. Coming up Wednesday, he found a man aboard who had neither ticket or money, but who got off at Paw Paw. While some switching was being done the dead beat stepped into a shop and got some meat to take home; but he was followed by the new conductor, who unceremoniously took possession of the meat, and, handing it over to the station agent, told him to surrender it to the owner on payment of thirty-five cents, otherwise he would take it himself in the evening. It was awaiting him on the return trip, and hereafter fresh meat may be considered a legal tender on the Rock Falls Branch when that particular conductor is on duty.—*Aurora (Ill.) Beacon.*



Locomotive Boiler for the Great Eastern Railway of England.

The engravings have been made from detailed drawings furnished us by Mr. Bromley, the Locomotive Superintendent of this line. The following are the specifications for these boilers, and some comments on their construction will be found on the editorial page.

SPECIFICATIONS FOR BOILERS.

Boiler Barrel.—To be cylindrical, and butt-jointed, and to be made in all respects as shown on the drawings; to be 11 ft. 5 in. long from front of fire-box shell to back of smoke-box tube-plate, 4 ft. 5 in. inside diameter, and composed of $\frac{5}{8}$ in. plates of Yorkshire iron. The brand of the manufacturer of the plates to be kept where it can be seen. The several joints to be riveted as shown on the full-size detail drawing. Thickening plate to be riveted round dome manhole.

Longitudinal Stays.—The back-plate of the fire-box casing and the smoke-box tube-plate to be stayed together with 10 longitudinal stays $\frac{1}{2}$ in. diameter and $1\frac{1}{2}$ in. diameter at the screwed part, the back-plate of the fire-box to be tapped (see detail), and the stays screwed into it, and at the smoke-box tube-plate the stays to be secured by nuts and copper washers on each side of the plate. The stays to be supported at about the middle of their length as shown.

Smoke-box Tube-Plate.—The smoke-box tube-plate, to be of Yorkshire iron, $\frac{5}{8}$ in. thick, the top and side of the plate being turned forward 2 in., forming a flange for the smoke-box. This plate to be secured to the boiler barrel by a ring of Yorkshire angle iron, which ring must be faced, bored and turned on the edges and to the finished section shown on the drawings, the riveting to be as shown on the detail draw-

parallel. All tubes to be expanded by Dudgeon's patent expander, and afterward carefully flanged over and ferruled at the fire-box end only; at the smoke-box end the tubes are to be expanded only. The proportions for the metal in the tubes to be 70 per cent. best selected copper and 30 per cent. best Silesian spelter.

Ferrules.—The ferrules must be made to pattern, of best ferrule steel, and be a tight driving fit in the tubes. Great care must be taken that the ends of the tubes are not cracked or otherwise injured by improper expanding for the ferrules.

Fire-Box Casing.—The fire-box casing to be as shown, 6 ft. long, and 4 ft. 1 in. wide outside, the bottom to be 4 ft. 10 in. below the centre line of the boiler. The side-plates to be $\frac{1}{2}$ in. thick, the back plate to be $\frac{1}{2}$ in. thick and flanged over to join the top and side plates. The front or throat plate to be $\frac{3}{8}$ in. thick and flanged over, as shown, to join the barrel. The top plate, into which the roof-stays are screwed, to be $\frac{1}{2}$ in. thick, and riveted to the sides, as shown.

Mud-Plugs.—Four brass mud-plugs screwing on suitable brass seatings to be provided on the crown-plate of the fire-box casing, six mud-doors to be placed in the fire-box casing, just above the foundation-ring, and twelve brass mud-plugs to be screwed into the smoke-box tube-plate and back casing plate; all being in the position and of the form and dimensions shown on the drawings.

Foundation-Ring.—The foundation-ring to be of Yorkshire iron 3 in. wide by $2\frac{1}{2}$ in. deep at sides, $4\frac{1}{4}$ in. at ends and corners, and riveted as shown on drawings. A detail drawing of the fire-box corners will be supplied, showing the method of riveting for the foundation-ring.

Ash-Pan.—The ash-pan to be as drawing, with a movable air-tight door at the front, so arranged as to be worked from the foot plate. The sides to be of $\frac{1}{4}$ -in. plates and the bottom

$1\frac{1}{2}$ in. where plain, and $1\frac{1}{4}$ in. where screwed. The sides of the fire-box casing to be stayed together by eight transverse stays, 1 in. diameter where plain and $1\frac{1}{4}$ in. where screwed. They are to be screwed through the top casing plate, and take a fair bearing on cant washers as shown on the drawings. The whole to be in all respects as shown on the arrangements and detail drawings.

Fire-bars and Carriers.—The fire-bars to be of cast-iron to the form and dimensions shown, the carriers to be of wrought-iron, and secured to the ash-pan and foundation-ring in the manner shown on the drawing.

Smoke-box.—The smoke-box to be of the form and dimensions shown on the drawings. The sides to be $\frac{1}{4}$ in. thick of best Staffordshire iron, riveted to the flange of the tube-plate. The front plate to be $\frac{1}{2}$ in. thick, and riveted to the sides with an angle-iron $2\frac{1}{2}$ by $3\frac{1}{2}$ by $\frac{1}{2}$ in. thick. A hole for the door to be cut in this plate 4 ft. diameter, inside which an angle-iron ring $2\frac{1}{2}$ in. by $2\frac{1}{2}$ in. by $\frac{1}{2}$ in. is to be riveted. All rivets in the smoke-box to be $\frac{3}{4}$ in. diameter, $2\frac{1}{2}$ in. pitch and to be snapped on the outside. Top of stay-plate in smoke-box to be covered with fire-brick, over which are placed iron plates $\frac{1}{2}$ in. thick, supported by 2-in. angle-irons riveted to the smoke-box sides with counter sunk rivets; the fire-brick to be kept $\frac{1}{2}$ in. clear of the smoke-box plates.

Smoke-box Door.—The smoke-box door to be of best best Staffordshire iron $\frac{3}{4}$ in. thick, 4 ft. 5 in. diameter. Full particulars of the shape and dimensions of door and details can be seen by reference to the drawings.

Chimney.—The chimney to be of good, smooth, best best Staffordshire iron, $\frac{3}{4}$ in. thick, butt jointed with counter-sunk rivets down the back, to have a hoop of half-round iron at the top, bottom to be of Yorkshire iron perfectly free from hammer marks, or of malleable cast-iron, and accu-

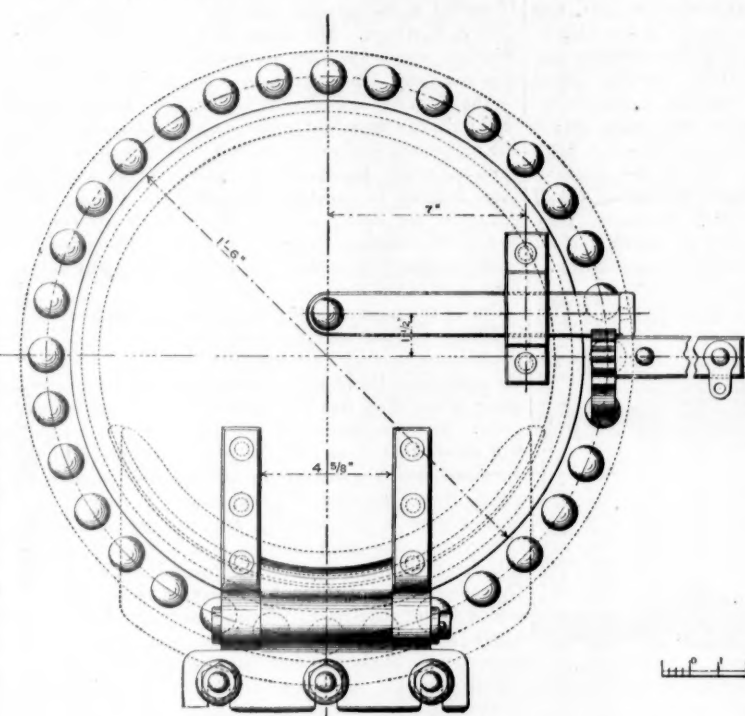


FIG. 14.

FURNACE-DOOR OF EXPRESS ENGINES OF GREAT EASTERN RAILWAY.

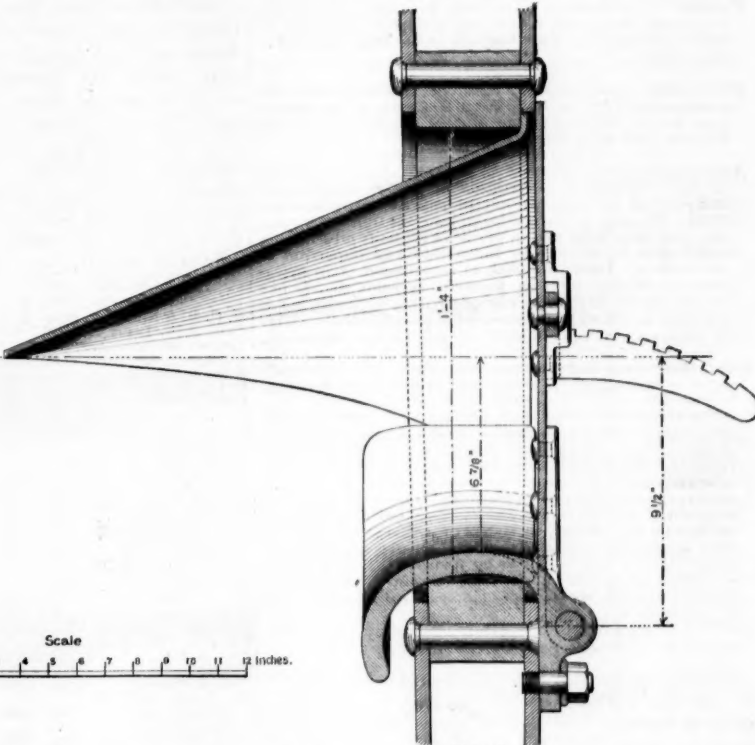
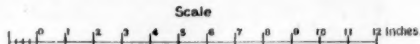


FIG. 15.

ings. Six washing-out plugs to be inserted in the plate as shown.

Dome.—The dome 1 ft. 9 in. inside diameter, 1 ft. $9\frac{1}{4}$ in. high and $\frac{1}{2}$ in. thick; to be in one plate with the seam welded up. The bottom to be flanged outward for attachment to the boiler and the top to have an angle-iron ring riveted in it, to which the cover is to be secured by studs $\frac{1}{2}$ in. diameter in the position shown on the drawing. The cover to be wrought iron $\frac{1}{2}$ in. thick, and both the angle iron and cover must be properly faced up, so that a perfectly steam-tight joint may be made. A tracing of the finished section of the angle iron will be supplied. Angle irons and plates to be of Yorkshire iron.

Steam Collecting Pipe.—Inside the dome, and secured to its side, is to be placed a cast-iron steam collecting pipe, slotted as shown for the admission of steam. A boss with a brass liner driven in tight and properly secured carries the regulator rod which runs the entire length of the boiler. A wrought-iron pipe 5 in. internal diameter enters a suitable hole in the cast-iron pipe and is secured in the tube-plate by a ferrule of the best steel turned to a driving fit. The whole to be as shown on the drawing.

Rivets.—The boiler rivets to be $\frac{3}{4}$ in. diameter, except those through the angle iron at smoke-box tube-plate, fire-door, and foundation rings, which are to be $\frac{1}{2}$ in. diameter, well snapped; the holes in the plates to be slightly counter sunk under the rivet-heads, and so punched that when the plates are in the proper position for riveting the smaller diameters of the holes shall be together at the centre of the joint. All holes in the various plates and angle irons must be perfectly fair with one another, and must not be drifted in any case; should any of the holes not be perfectly fair, they must be rimmed out until they become so, and every hole must be completely filled by the rivet. The holes in angle irons must be marked from the plates and drilled (not punched), the pitch of rivets and lap of joints to be in all cases as shown in the detail drawing. Great care must be taken that the plates are brought well together before any rivets are put in. The edges of all the plates to be planed before being put together. Any caulking which may be required must be done with a broad-faced tool, care being taken that the plates are not injured by so doing. The boiler to receive a coat of thick boiled oil while warm, and another of red lead before being lagged.

Tubes.—The boiler to contain 242 brass tubes in horizontal rows, $1\frac{1}{4}$ in. diameter at the fire-box end, and $1\frac{1}{2}$ in. diameter at the smoke-box end for a length of 3 in.; to be Broughton Copper Company's, Everitt's, Green's, Muntz's, Wilks', or other maker approved by the company's Locomotive Superintendent; to be No. 11. B. W. gauge thick at the fire-box end for a length of 1 foot, then then to be drawn tapered to No. 13. B. W. gauge thick at the smoke-box end, the taper being on the inside only, the outside remaining

of 5-16 in. plates, good Staffordshire iron, to be riveted together with $\frac{1}{2}$ -in. rivets and angle-irons 2 in. by 2 in. and secured to the foundation-ring as shown in the detail.

Fire-Door.—The ring for the fire-door hole to be 16 in. internal and $21\frac{1}{4}$ external diameter, to be of Yorkshire iron, and to project $\frac{1}{4}$ in. beyond the edges of the plates, which are to be well caulked. The door to be of wrought-iron with cast-iron hinge, and made to drawing.

Expansion Bracket.—The fire-box to be supported on the frames by angle-irons $5\frac{1}{2}$ in. by $2\frac{1}{2}$ in. riveted to the sides with $\frac{3}{4}$ in. rivets, these angle-irons to be of Yorkshire iron, and to the section shown on the drawings.

Inside Fire-Box.—The inside fire-box to be of copper, and to be 5 ft. 2 in. long inside at the top and 5 ft. $3\frac{1}{4}$ in. at the bottom, the height inside at the middle of the box to be 5 ft. 6 in., the width inside to be 3 ft. 4 in. at the bottom. The tube-plate to be $\frac{1}{2}$ in. thick where the tubes and barrel stays pass through it, the remaining portion to be reduced by hammering to $\frac{3}{8}$ in. thick, to be flanged back to join the top and side plate. The back plate, which is to be $\frac{1}{2}$ in. thick, to be flanged forward. The sides and top to be in one plate, and $\frac{3}{8}$ in. thick, the joints to have $2\frac{1}{2}$ in. lap when finished, and to be single-riveted with $\frac{3}{4}$ in. iron rivets, except those through the foundation-ring. Where a rivet is applied the instruction as regards the boiler riveting to be carried out.

Stays.—The outside and inside fire-boxes to be stayed together on all sides with copper stays 1 in. diameter and 12 threads per inch, to be screwed steam-tight into both copper and iron plates and afterward riveted over at each end. The pitch of stays to be in all cases exactly as shown on the drawing and great care to be taken that the holes in the inside and outside boxes are exactly opposite one another.

Copper.—To be of the best quality, and to be supplied by either the Broughton Copper Co., Faskoe Greenfel & Co., Vivian & Sons, John Bibby & Co., or other makers to be approved of by the Locomotive Superintendent of the company. The copper stays to be made from best soft-rolled bars, and the copper plates to be properly annealed, and to stand a test of being bent cold without showing any signs of cracking.

Water Space.—The water space between the fire-box and shell to be 3 in. wide at the foundation-ring and to be enlarged upward to the dimensions shown on the drawing.

Crown Stays.—The crown of the fire-box to be secured to the top plate of the fire-box casing with $\frac{1}{2}$ in. stays of Lowmoor or Bowling cable iron, pitched as shown, the ends and necks screwed where they pass through the copper and casing plates so as to form a perfectly steam-tight joint. The ends of the stays are riveted over on the casing plate and the two rows nearest the tube plate are further secured by chamfered lock-nuts on the inside of the copper plate. Row next tube-plate

rately fitted to the smoke-box, the whole to be made in all respects to the drawing supplied.

An Iowa Railroad Anniversary.

Twenty-five years ago to-day was a great day in Davenport, and also for the railroads of Iowa. The first train of cars was on that day run out of Davenport west, and the event was, of course, properly celebrated. Referring to our files we find in the issue of Tuesday, August 21, 1855, a notice like this:

Messrs. Cook and Sargent have made arrangements to run a special train of cars to Walcott, twelve miles west of this place. Preparations will be made for taking out some three hundred persons. Two passenger cars will be brought over from Rock Island for the accommodation of the ladies, and the train leaving at 9 a. m. will return at 4 in the afternoon. Walcott is the first station, 12 miles west of Davenport, and the 25th of August will be another marked day in the history of the state, and especially of Davenport, for the completion and the running of the cars over the first section of a railroad constructed in Iowa.

The excursion came off as advertised and was a wonder of its kind, being the first train of cars run west of the Mississippi River in Iowa. The Gazette report of the party is contained in a column and a half editorial the day after the excursion. It begins with the party, which was composed of 500 persons. Their accommodations were five open cars and two passenger cars for the above-mentioned ladies. These were propelled by the good locomotives Le Claire and Iowa, which, with "their accompanying tenders, constituted the first passenger train ever run over the Mississippi & Missouri Railroad. A band of music added to the interest of the occasion, which was heightened by the presence of some 50 or 75 ladies." Comment is made on the condition of the road-bed, which was smooth and even. The account continues:

Arriving at their destination about 10 o'clock, the passengers were welcomed by a number of persons who had preceded them or were residents of Walcott. The gentlemen repaired to a convenient spot to engage in the mission which had brought them thither, which was to purchase at public auction the lots yet remaining unsold on the town plat of Walcott. Mr. H. Kilbourn, the popular auctioneer, mounting the rostrum, soon had lots in Walcott selling at from \$200 to \$250 each. These were choice lots, however, and they soon depreciated in price, until from \$100 to \$150 were the ruling rates, and outlots even went so low as from \$50 to \$75.

The party arrived home in due time and in the best of spirits, "all well pleased with the recreation of a delightful day, and some gratified with the reflection of being proprietors, at a reasonable rate, of lots in the first depot town on the Mississippi & Missouri Railroad."—Davenport Gazette, Aug. 25.



Published Every Friday.

CONDUCTED BY

S. WRIGHT DUNNING AND M. N. FORNEY.

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EDITORIAL ANNOUNCEMENTS.

Passes.—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

Addresses.—Business letters should be addressed and drafts made payable to THE RAILROAD GAZETTE. Communications for the attention of the Editors should be addressed EDITOR RAILROAD GAZETTE.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

JULY EARNINGS.

Railroad earnings for July are reported in our table for 52 railroads, working this year an aggregate of 33,284 miles of railroad, which is 18.4 per cent. more than they worked in July last year, and is about 38½ per cent. of the total mileage of the United States. Not all this increase consists of new roads, by any means; the largest part of the additions of 1,324 miles to the Chicago, Milwaukee & St. Paul, of 729 to the Louisville & Nashville, of 681 to the Union Pacific, and of 444 to the Wabash consists of roads that were in operation before 1879 and have been acquired by these companies, and these additions form three-fifths of the whole increase in mileage. The earnings of these 52 roads were \$23,627,258 in July this year, against \$18,171,822 last year—an increase of \$5,455,436, or 30 per cent. Only one of the 52, the Philadelphia & Reading, shows any decrease in earnings, and its decrease is trifling. The average earnings per mile of road have increased from \$647 to \$710, or 9¾ per cent. For June our table showed an increase of 16.7 per cent. (for 50 roads), for May (49 roads) an increase of 10.4 per cent., for April (56 roads) an increase of 14.3 per cent., for March (53 roads) 19 per cent., for February (52 roads) 12½ per cent., and for January (46 roads) an increase of 16 per cent. in average earnings per mile of road. Thus while the percentage of increase in July was very large, it was smaller than in any preceding month of the year, and the vast increase of 30 per cent. in aggregate earnings was due more than in most previous reports to the increase in mileage worked. Though but one road has smaller total earnings, seven have smaller earnings per mile; but in every case but one this is evidently due to the addition of new road with light traffic.

The comparison is with a month of favorable earnings. Last year our table (36 roads) showed an increase of 6 per cent. in average earnings per mile in 1879 over 1878, and the year before the average earnings per mile of 25 reporting roads were reported to be 9 per cent. greater in July, 1878, than in the corresponding month of 1877. July was a very bad month for earnings in 1877, however, and may be said to have

marked the lowest ebb in the long period of depression, immediately after which the recovery began.

The fluctuation of July earnings for the past seven years may be traced in the following table of earnings per mile of road. These are of course not always a measure of the financial strength of a company nor of the returns on the capital invested; for, aside from the fact that they are gross earnings, which in the past seven years of great changes in prices, in methods of operation and of rates charged have borne various relations to net earnings, there is the further fact that several of the roads have had material additions to their lines, and that in most cases the additions have lighter earnings per mile as well as a less capital cost than the old ones. Still it is easy to give too much weight to this consideration. Many roads have had a constant and pretty steady growth, and where 6 per cent. of the road was new last year, the condition is nearly the same if 6 per cent. is new this year. The greatest allowance has to be made when very large additions are made in a single year, by lease and consolidation as well as construction, very different in rate of earnings from the old road. Striking examples of such cases this year are the Chicago, Milwaukee & St. Paul, the Union Pacific, and the Wabash, St. Louis & Pacific. The average mile of either of these roads is a very different thing from what it was last year, and though this may be provided for, so far as the consolidations are concerned, by including their earnings last year under the company then working them in the comparisons of this year with last, it does not extend to previous years, and so we are unable to get that view of earnings for a long period which helps materially in forming a judgment of the position, progress and tendency of a railroad's business. But all such comparisons must be made with judgment; they are only aids to the appreciation of the position of an individual property, not a final and perfect criterion.

July Earnings per Mile for Seven Years.

	1874.	1875.	1876.	1877.	1878.	1879.	1880.
B. C. R. & Nor.	\$190	\$332	\$190	\$178	\$245	\$249	\$292
Calro & St. Louis	246	135	150	110	128	154	241
Central Pacific	942	1,099	1,085	741	728	637	715
Chicago & Alton	715	598	620	451	639	639	708
Chic. & East Ill.	—	—	—	305	442	418	519
Chic., Mil. & St. Paul	536	902	480	394	440	438	330
Chic. & N. W.	559	965	563	490	561	600	672
Chic., Ham. & Dayton	646	580	490	467	486	572	710
Clev., Mt. V. & Del.	—	—	176	156	174	187	195
Denver & R. G.	247	190	249	364	256	737	—
Eastern	—	—	—	854	818	878	909
Flint & P. M.	343	—	—	—	—	283	381
Hannibal & St. Jo.	458	382	460	438	457	342	590
Ill. Cen. in Ill.	721	745	539	541	558	548	625
Ill. Cen. in Iowa	295	472	294	251	279	202	324
Ind., Bloom. & West.	253	257	247	258	395	418	488
Int. & Gt. North.	441	155	158	174	179	187	221
Louisville & Nash.	441	350	396	414	380	431	427
Mem., Pad. & Nor.	—	—	113	135	131	133	154
Mo., Kan. & Tex.	334	269	285	322	280	329	414
Mobile & Ohio	229	194	179	184	190	218	257
Nash., Chat. & St. L.	340	340	374	378	323	382	434
Northern Cen.	1,286	1,450	1,028	774	842	995	1,381
Og. & L. Champlain	—	—	—	466	359	358	399
Pad. & Eliz.	—	—	—	—	145	148	172
Pennsylvania	2,070	1,905	1,800	1,096	1,478	1,622	1,902
Phil. & Reading	1,235	1,092	1,154	1,147	1,068	1,408	1,385
St. L., A. & T. H.	—	—	—	—	—	—	—
Bellefonte Line	603	504	417	453	477	532	650
Main Line	—	—	—	—	364	494	682
St. L., Iron Mt. & So.	334	330	376	405	437	482	645
St. L. & S. F.	270	297	268	268	347	361	—
Scioto Valley	—	—	—	—	282	241	340
Texas & Pac.	424	273	362	402	319	367	412
T. P. & Warsaw	377	391	314	388	438	473	—

Here we have the earnings per mile of 33 roads for July of the last three years. Only three of these roads had larger earnings in 1879, and only two larger earnings in 1878 than in 1880, though seven had larger earnings in 1878 than in 1879. Of 30 roads that report for 1877, only three had larger earnings per mile than this year; of 27 that report for 1876, all but two did better this year than then; nine, however, out of 24 earned more per mile in 1875 than this year, including such important roads as the Pennsylvania, the Reading, the Northern Central and the Illinois Central, which moreover have been little affected by additions to their mileage. For 1874 earnings per mile are given for 21 roads, and on seven of these they were larger that year than this.

It will be seen, therefore, that the increase in earnings is not so general when compared with 1874 and 1875 as in comparison with the following years; which gives occasion to notice that in 1874 and earlier many roads were earning more gross than they are now with a very much smaller traffic, because rates were higher then—for freight often nearly twice as high; but at the same time net earnings were generally less, because, in spite of this great reduction of rates, the percentage of earnings to expenses has generally been reduced—a given amount of work is done at a much lower cost than in those years, largely due to improved methods and appliances, partly to lower prices of supplies, and partly, and on some roads very largely, by an increase of the traffic.

Coming back now to our large table, there are some things that attract special attention. The great improvement of the two reporting trunk lines we have noticed heretofore; last year they were carrying east-bound through freight at altogether unprofitable rates in July, and the difference in these rates will

account for a part of their improvement. The westward shipments, at the same rates, were immensely greater this year than last. The rates were partly, but not wholly, restored in August last year, and wholly so in September, so that improvement on this score can hardly be expected for more than one month more. The Northern Central's heavy through traffic to Baltimore also causes it to feel the effect of the difference in rates. Still more, in proportion to their whole traffic, is this change felt on the Cleveland, Columbus, Cincinnati & Indianapolis and the Terre Haute main line; and it is considerable, also, on the Indiana, Bloomington & Western, the Toledo, Peoria & Warsaw, and the Wabash, all of which have to carry a very large part of their freights at trunk-line rates, whether these are 10 or 40 cents per hundred. The increase of 44 per cent. on the Terre Haute road (Indianapolis & St. Louis) is one of the largest reported for a road without increase of mileage in an old country.

Another group of roads deserving special attention is that in the Southwestern Association. Last year these roads were engaged in a desperate railroad war, which affected their earnings very largely where the Southwestern traffic was a large part of their whole business, which was the case particularly with the Hannibal & St. Joseph and the St. Louis, Kansas City & Northern. The latter is a great part of the Wabash, which was also somewhat affected by this war last year. The great gain of nearly 64 per cent. on the Hannibal & St. Joseph is doubtless largely due to the change from war to peace over this traffic, for the movement was very large last year as well as this. Both the other Association roads that report show a large increase in earnings per mile, the Chicago & Alton 25 per cent., and the Wabash 17 per cent., though this traffic is too small a part of the present great system of the latter to be credited with any very large part of the increase of earnings.

One of the most notable changes is the large increase in Illinois Central earnings, both in Illinois and Iowa, not because they are extraordinarily large, but because the earnings of this road more than those of almost any other in the West had for years stubbornly refused to grow. An examination of the table in this article will show that from 1876 to 1879, inclusive, they remained nearly stationary in Illinois and decreased rather than increased in Iowa, and were very much smaller than in 1874 or 1875, and, we may add, previous years. The good time seems to have come for it at last. The circumstances are favorable this year. The maintenance of through east-bound rates tends to send a larger proportion of the freight to Chicago, where it may take advantage of lake rates, and consequently to the north-and-south roads that lead to Chicago, or to the Mississippi River for shipment southward. Greater prosperity in the South, also, is of immense advantage to the Illinois Central.

The Flint & Pere Marquette is the only representative lumber road reporting, and it shows an increase of 33 per cent., though lumber business was better last year than for many previous years.

Two New England roads report, showing good increases, though small in proportion to those on many Western roads or even on the trunk lines—about 10 per cent. on the New York & New England, and 14 on the Eastern. The two roads from the North to Texas have gained very largely (26 and 33 per cent.); the two reporting roads in Texas have gained largely, but not so much. The six reporting Southern lines east of the Mississippi have made generally smaller gains than the Western and Texas roads.

There is hardly anything more notable in the whole table than the large earnings of the two Colorado roads, the Denver & Rio Grande and the Denver, South Park & Pacific. The former shows that average earnings per mile may be increased as well as decreased by the addition of new road. Its road was one-half longer this year than last, but its earnings per mile were nearly three times as great this year. The additions are, with the Denver, South Park & Pacific, the only lines which give access to the mining regions of Colorado which have attracted so large a population during the past year, to which all kinds of supplies have to be carried. For the transportation of these and passengers as well very high rates can be obtained, as both roads are under the same control, and they replace a wagon service over horrible mountain roads, which was at once very costly and very wearisome. The passenger rate is reported to be about 10 cents a mile, and the passenger traffic much of the time is positively large. It will be noticed that the earnings per mile of the Denver, South Park & Pacific are among the largest reported, approaching those of the Eastern Railroad of Massachusetts, which has a thickly peopled country and great indus-

tries on its line and is one of the oldest roads in the country, while the South Park road has not been done a year. These two roads show the effect of special circumstances—namely, a sudden and very great development of a hitherto unpeopled country and absolute command of the transportation to and from it.

For the seven months ending with July our table has reports from 46 railroads, with 28,206 miles of road this year, which is 10.9 per cent. more than they worked last year. These 46 roads earned in the aggregate \$137,740,614 this year, which is 27 per cent. more than their earnings last year, and their average earnings per mile of road increased from \$4,263 to \$4,883, or 14½ per cent.—certainly a very large increase. Not one of the 46 roads shows any decrease in total earnings, and only three a decrease in earnings per mile. No less than six have an increase of more than 50 per cent. in earnings per mile, and no less than 18 an increase of more than 25 per cent. The largest earnings per mile of road are this year \$18,287 on the New York Central, \$12,657 on the Pennsylvania, \$10,229 on the Reading, \$8,368 on the Denver, South Park & Pacific, \$5,769 on the Cleveland, Columbus, Cincinnati & Indianapolis, \$5,720 on the Eastern and \$5,231 on the Great Western of Canada. No others earned so much as \$5,000 per mile in the seven months. The smallest earnings per mile are \$990 on the Memphis, Paducah & Northern, \$1,135 on the Paducah & Elizabethtown, \$1,145 on the Alabama Great Southern, \$1,456 on the Cairo & St. Louis, \$1,527 on the Cleveland, Mt. Vernon & Delaware, \$1,585 on the International & Great Northern, \$1,588 on the St. Paul & Sioux City, \$1,593 on the Kansas City, Lawrence & Southern, \$1,687 on the Scioto Valley, and \$1,697 on the Northern Pacific. No other road earned less than \$2,000 per mile in the seven months this year. Last year four of these 46 roads earned less than \$1,000 and sixteen (against ten this year) less than \$2,000 per mile in the same time.

There are seven roads reporting whose traffic is largely through, carried at trunk-line rates—the New York Central, the Pennsylvania, the Northern Central, the Great Western, the Grand Trunk, the Cleveland, Columbus, Cincinnati & Indianapolis, and the Ogdensburg & Lake Champlain. These seven roads have increased their earnings for the seven months 23.2 per cent., with substantially the same mileage (a slight decrease), which is much more than the average increase per mile. The largest increases of earnings, with the exception of that of the South Park road to Leadville, are on roads which, notwithstanding the increase, still have light earnings. All over 35 per cent. are on lines with less than the average earnings.

July closes the period last year when freight rates eastward were generally and badly demoralized, and though there was not a full recovery in August, the conditions then were much more nearly like those of August this year than in any earlier month, there being a very good traffic both years, and on some important roads more east-bound traffic last year than this. After August the conditions are likely not to be much better this year than last, so far as through freight in both directions is concerned. The movement was very heavy both ways last year, and rates were good and well maintained. The opportunity for an advance in rates seems hardly likely to come so early this year as last, just as it came later last year than the year before. It all depends on the pressure of traffic, and large as the movement is now, it is not sufficient to keep up lake and canal rates, which are now the lowest, we believe, that they have been this year, amounting with the Buffalo transfer charge to about 10 cents a bushel on corn from Chicago to New York, while the rail rate is 16.8 cents. So long as water rates do not advance materially, it will be idle to think of advancing the rail rates on grain, and there is a sort of superstition, which we suppose will be followed hereafter as heretofore, that the provision rate must be only five cents higher than the grain rate.

On the other hand, there has been such a revival of passenger traffic and local traffic that the earnings from through east-bound business, large as they are, have become a much smaller proportion of the whole. Low prices for the abundant harvests will doubtless check Western consumption somewhat, and in no event can be expected that immense expansion of business which took place last fall, and in many cases was too rapid to be healthy. But earnings were so good last fall in many parts of the country that it will be quite satisfactory to see them equaled this year, even if they are not exceeded.

ENGLISH LOCOMOTIVE BOILERS.

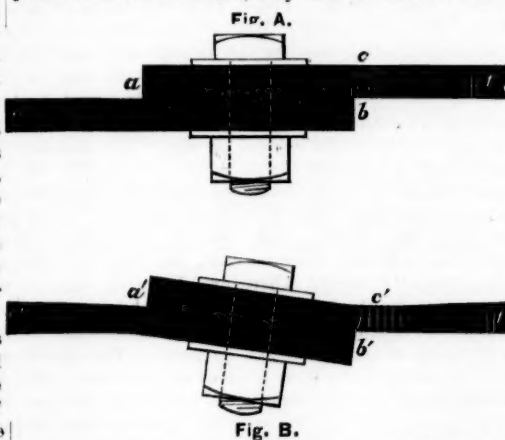
It has so long been the fashion in this country to assume and assert the superiority of American locomotives over those of all the rest of the world that it will,

perhaps, excite a ripple, or may be a storm, of animadversion, to admit frankly that in the construction of boilers our European competitors often excel us. This fact is sometimes acknowledged by American mechanical engineers who visit Europe and see the work done there, and is generally indicated by the descriptions and specifications of boilers which come to us through the engineering literature from the other side of the Atlantic.

It is not our purpose, though, to deal with the subject as a mere matter of opinion, but to lay before our readers detailed illustrations and specifications, which will be found on another page, of one of the most recently constructed forms of English locomotive boilers, so that practical men can compare the design, if not the workmanship, with that commonly used here. We are able to do this through the favor of Mr. Massey Bromley, the Locomotive Superintendent of the Great Eastern Railway of England, who has furnished us with drawings, in detail, of the boilers of the Mogul engines built for his line, of which we published engravings and a description in our issue of March 5 of the current year. The boilers of these engines are almost exactly the same as those for the express engines illustrated in the *Railroad Gazette* of Aug. 13.

Before describing them, it may be well to say that the form of seams known as butt-joints is almost unknown, or at least unused, here. Not a single locomotive manufacturing firm or company is using them, and if any master mechanic has ever adopted the plan, the fact has never become known to the public.

The advantage of this form of seam is that it distributes the strains at the joints uniformly over the whole section of the metal, whereas, with an ordinary lap joint, the strain is concentrated at the edges of the overlapping plates. Thus, if two pieces of plate iron are riveted or bolted together, as indicated in fig. A, and are put into a testing machine and subjected to a tensile strain, they will assume the form



represented in fig. B; that is, the tendency of the plates is to draw into a straight line, and in doing so each one will be bent at the edge of the other, as shown at *a'* and *b'*, fig. B. The effect of this, or the nature of the strains to which the material is subjected, has been illustrated by taking two pieces of india-rubber, about 1¼ in. wide and ⅜ in. thick, the same as ordinary boiler plate. These two pieces are then lapped over each other, just as the plates are in a single-riveted seam, and fastened together with a bolt, as shown in fig. A. If a number of parallel lines, *c b*, are drawn across the edge of this rubber, and it is then stretched, the two pieces will draw into a straight line, as shown in fig. B. If sufficient force is exerted, the parallel lines will assume the form shown at *c' b'*, fig. B. That is, the space between them will be greatest next to the overlapping edge *b'* of the other piece of rubber, thus showing that the tension at that point is greater than it is on the side *c'*. If two lines *f' f'* be drawn an inch or two from the overlapping edge, it will be found that when the rubber is stretched, while they will be separated farther, they will still remain parallel or the same distance apart, thus indicating that at this point the whole section of the material is strained uniformly. An experiment of this kind shows that the point where there is the greatest strain on the rubber is in the corner *b'*, or next to the overlap, or what would be the caulking-edge of a boiler. It is at this point that the channeling or furrowing of boiler-plates occurs. This is usually attributed to the bending action of the plates, which is said to loosen the scale at this point, and thus exposes the metal to the corrosive action of the water.

This explanation, though, is not entirely satisfactory, as it seems doubtful whether there is sufficient movement or bending of the plates to produce the effect described. The hypothesis that corrosion will take place more rapidly if the iron or steel of which the boiler is made is subjected to great tension than it will under a

comparatively low strain seems to furnish a more satisfactory explanation than the bending theory does. If metal is strained beyond the elastic limit, a permanent disturbance of the relation of its molecules occurs, and without venturing into the abstruse field of molecular physics, it would seem as though, under such conditions, it was more susceptible to chemical action than it is when subjected to less strain.

In confirmation of this theory, we have the fact that just at the points where the metal in a boiler is subjected to the greatest strain is the place where corrosion is most rapid. There is also the fact that grooving or channeling takes place much more frequently in the horizontal seams, which must resist the greatest strain in a boiler, than it does in the circumferential seams.

Whether grooving or channeling is due to either the bending action or to excessive strain at the point where this kind of corrosion occurs, it is evident that if a form of seam is adopted which will not subject the plates at any point either to bending action or to overstrain, it will be an effectual remedy of the evil. This result, it has been found, has followed the use of butt-joints in Europe, and for this reason we have taken the pains to present to our readers drawings of a boiler made in this way, and showing the arrangement of the parts in detail.

Figs. 1, 2 and 3, on another page, are general drawings of the boiler, from which it will be seen that all the longitudinal seams are "butt-joints," with covering plates both inside and outside. The circumferential seams of the barrel of the boiler are also butt-jointed, but have a covering ring on the outside only. From the specifications, published with the engravings referred to, it will be seen that the edges of the plates are all planed when they are butted together. Fig. 4 is a plan showing the arrangement of the seams around the dome.

It will be seen that the circumferential seams have two rows of rivets, whereas the horizontal ones have four. Fig. 5 is a section of one of the circumferential seams, fig. 11 is a transverse section of a horizontal seam, fig. 12 a plan and fig. 13 a longitudinal section of the latter, showing the junction of the longitudinal covering plates with the ring over the circumferential seams. These views show that the outside covering plate abuts against the ring in the line *A B* of figs. 12 and 13. The inside covering plate is of the form *A B C D*, fig. 12, indicated by the dotted lines, and extends across the circumferential joint the whole width of the outside ring, as shown clearly in fig. 13. It is this portion of the construction which has usually been the most puzzling to American boiler-makers. From the drawings it will be seen that it is very simple.

The section, fig. 11, shows clearly that the strains on the plates with a seam of this kind are equally distributed over the whole section of the plates, and that none of the bending action or of the concentration or inequality of strains to which ordinary single-lap joints are subject can occur where this form of seam is used. This is of much more importance in the longitudinal joints than in the others, because the former must resist a much greater strain than the latter. That butt-joints do have the effect of preventing, or at least very materially diminishing, the effects of furrowing, was shown by Mr. Kirtly, Locomotive Superintendent of the London, Chatham & Dover Railway, in a paper read before the Institute of Mechanical Engineers some years ago. In this paper he cited the example of an engine "which was constructed with butt-joints all flush throughout, the transverse joints being covered by external hoops, and the longitudinal joints by internal strips." This boiler had been at work for nineteen years, and the grooving had not taken place at the butt-joints. He said further:

"The remarkable contrast shown by the freedom of the butt-joints in this boiler from the grooving so universal with the lap-joints in the ordinary boilers appears only to admit of being accounted for by the difference of construction of the joints in the two cases."

Another engine was referred to in this paper which had run 343,000 miles and was badly grooved at the angle-iron joint at the smoke-box end, while the rest of the joints, being butt-joints, were free from the grooving.

In the discussion which followed the reading of this paper, Mr. W. Naylor spoke of another boiler with butt-joints which showed no signs of grooving after twenty years work.

Mr. F. W. Webb, Locomotive Superintendent of the London & Northwestern Railway, said that they now had ten years' experience with butt-joints with outside cover-plates. "A great many of these boilers with butt-joints had been examined and there had not been any corrosion observed along the horizontal joints, as

the plates were not subjected to any material bending at those joints; but a considerable grooving had been found to take place at the transverse joints, opposite to the edge of the outside lap; and there was the usual deep grooving at the angle-iron joints at the smoke-box and fire-box ends, where the bending action still came into play."

Besides the fact that this form of seam prevents grooving, it also has much greater strength than any other, which is, or should be, a very strong recommendation for its use. The additional cost in the construction of a boiler, if such seams are used, would be but a mere trifle compared with the total cost of a locomotive, and should not stand in the way of their use here.

From the engravings it will also be seen that in some other respects English practice in boiler construction differs from ours.

Fig. 9 is a section of the junction, *F*, fig. 1, of the throat sheet.

Figs. 7 and 8 represent the method of forming the junction of the barrel of the boiler with the smoke-box. If it is desirable to enlarge the smoke-box, this method of doing it seems to be preferable to that of extending lengthwise, which is now so common here.

Attention has often been called to the importance of using a ring around the base of the dome to strengthen the boiler at this point. Wilson, in his treatise on boiler construction, says:

"The too common practice of cutting a piece of plate about 15 x 12 in. out of a boiler-shell without providing any strengthening piece to the edge of the hole, where the tension of the plate is concentrated, and where it is liable to be further weakened by wasting, cannot be too severely censured, and has already led to numerous fatal explosions. * * * The edge of the plate can be cheaply and adequately strengthened by riveting on a ring of wrought iron. The ring should be at least 5/8 in. thick and 4 in. wide, so that the rivet holes at 3-inch centres, and not 6 or 7 as is usual, may be kept well away from the edge of the hole."

A very simple calculation will show that a boiler plate with a man-hole cut into it and a dome over the opening is, as ordinarily made in this country, much weaker than the other parts of the boiler-shell. It is both astounding and criminal that the use of the simple safeguard of a strengthening piece is so universally neglected in this country. Its construction in the boiler illustrated is shown very clearly by the engravings. It will be seen that it is made wide enough so that it will take not only the rivets by which the dome is fastened to the shell, but an extra row outside of these.

The practice of countersinking the rivet holes slightly on each of the plates, which is shown clearly in the detail engravings, is worthy of imitation here. In view of its very trifling cost, that consideration should not stand in the way of adopting it.

From fig. 2 it will be seen that the top and sides of the fire-box are all made of one plate. This form of construction can hardly be recommended for this country, where engines are worked much harder than they are in Europe, and often with very bad water, and where, consequently, repairs of the fire-box must be made oftener than there.

The staying of the crown-sheet was not shown in the drawings of the boiler received, but from the engravings and description of the engine published in the *Railroad Gazette* of March 5, it will be seen that it is stayed with stay-bolts, a system of construction which is now in general use in Europe. In that number there is also a description of the staying of these boilers, to which readers are referred.

In commenting on their construction, the *Railway Engineer* said:

"The water in the eastern counties being, from a boiler-user's point of view, of uniformly bad quality, the engine is well provided with mud-plugs and hand-holes. The roof of the fire-box can be cleaned transversely from four apertures, and longitudinally through three, while the space just above the foundation ring is provided with four mud doors and two mud plugs. The tubes can be well cleaned from the smoke-box, six plugs in all being provided, two of the middle tubes, some distance right and left of the centre line, being omitted to allow of plugs being inserted in their places. The gain in circulation and increased facility for getting the cleaning rods and jet from the hose pipe into the middle of the nest of tubes probably more than makes up for the 1 per cent. of heating surface that is sacrificed. The cast-iron fire-bars are carried by wrought-iron cross-bearers, resting on suitable wrought-iron brackets riveted to the inner sides of the ash-pan, which latter is attached by eight 1-in. bolts to the foundation ring, which along the sides and at the corners is made of a section like a letter *L* reversed. The upper part (to which the copper box is single-riveted all round) is 3 in. wide and 2 1/4 in. deep, and the stem of the *L* is 1 1/4 in. thick and 2 1/4 in. deep; the fire-box casing plates can thus be double-riveted to the foundation ring at the corners, while along the sides the deep part of the ring serves to carry the ash-pan; which, when taken down, permits the bars, bearers, etc., to come with it, when they are easily got at."

Figs. 14 and 15 represent the furnace door, which, it will be seen, is hinged at the bottom. It also has the inside deflector over the top which is so generally used in Europe and so little known here. The objection that master mechanics make to using it here is that it burns out very soon and cannot be made to stand the intense heat of our fire-boxes. Locomotive boilers are undoubtedly worked harder here than in Europe,

and it may be that the objection stated may be a valid one to the use of the deflector here, but it would be more satisfactory to know that these deflectors have failed here after a thorough trial.

Altogether the construction of this boiler has much that American engineers could imitate to good advantage, and, as was said in the beginning of this article, it is in many respects superior to our own practice.

Recent Railroad Legislation.

The laws of the various states passed during the last year contain a number of provisions of interest to railroad men generally. Some are interesting because novel and worthy of consideration as precedents for legislation in other states. There are others which should be generally known, because they may affect travel and transportation from various parts of the country to the state where the new law exists.

Color-blindness, which has attracted so much attention among physiologists in recent years, has received legislative consideration in Connecticut, as was noted at the time. An act passed last March requires the systematic examination of railroad employes for this defect. It imposes upon the state Board of Health the duty of preparing rules and regulations for periodic examinations, and directs that every company or trustee operating a railroad within the state shall cause its employes to be tested as to color-blindness and visual power. All descriptions of employes seem to be included; engineers, firemen, conductors, brakemen, station agents, switchmen, flagmen, gate tenders and signal men are specifically mentioned. The examinations are to be made at the expense of the respective companies, and are to be statedly repeated.

Illinois and New York have provided for enlarged powers of conductors in respect to preserving order. The Illinois law says that the conductor of any railroad train or master of any steamboat carrying passengers within the state shall be invested with police powers while on duty. The New York law, passed May 8 last, does not go quite so far, but authorizes the Governor to appoint any conductors or brakemen as policemen, and authorizes whoever may be so appointed to arrest, for criminal prosecution, persons engaged in playing cards or games of chance for money. A similar law, authorizing such appointments with a view of keeping the peace and arresting violent offenders on railroad trains, has for some years been in force in the state. Very probably the Illinois law would be welcomed by many as an advantageous increase of the conductor's authority. There are, however, reasons for considering the frame of the New York law, which requires an executive appointment, more judicious and really more advantageous to a company. The courts have in recent years been inclined to hold the companies liable and the conductors punishable for neglect of a conductor to exert his powers and the means at his command for protecting every passenger from violence at the hands of others; and it may be that, under a law conferring increased authority immediately and in general terms, the companies will find their liabilities increased unexpectedly; while, under a law which only authorizes an executive appointment, the companies can engage for police protection only so far as they desire.

Frauds in ticket sales have, in Indiana, been made criminally punishable. Any employe of a company who, in the course of his employment, comes into possession of a ticket and who, intending to defraud the company, sells, barter or gives it, or appropriates it to his own use, is pronounced guilty of embezzlement, and punishable by fine and imprisonment.

The whistling law passed in Indiana has provoked a great deal of objection within the state, and excited a good deal of attention without, for the sounding of whistles to the extent required by the law has been found by no means agreeable in many neighborhoods. The act peremptorily requires all railroad companies in the state to have a whistle attached to every locomotive, and directs that the engineer shall, when an engine approaches within eighty rods of any highway crossing, sound the whistle until the crossing is passed. In cities this strict rule is not imposed; the city may regulate whistling at street-crossings by its ordinances. But in suburban and rural neighborhoods the noise generated in obedience to the statute has been an intolerable annoyance. No doubt many victims may have been disposed to raise the question whether, in view of the wants and conveniences of a particular locality, the whistle may not be interdicted or restricted as a nuisance. Upon such questions the course of thought in the courts has always been that what the legislative has directed, or even authorized, in the prosecution of a railroad enterprise, cannot be judicially rebuked as a nuisance. However inconvenient or even noxious it may be, if it has warrant in statute

law, the judges do not interfere, but the sufferers must seek redress from the legislature. No doubt the Legislature of Indiana at its next session will be besought to relax its whistle law.

By a Massachusetts act, passed last March, "whoever willfully throws or shoots any missile at a locomotive engine, railway car, or who shall in any way assault or interfere with any conductor, engineer or brakeman while in the discharge of his duty" is declared punishable, and the conductor may arrest him with or without warrant. In connection with this may be mentioned a law of Michigan, passed several years ago, which imposed fine and imprisonment, even for life if the court should so order, upon any person who should, by placing an impediment upon the track, or by any other means whatsoever, wilfully endanger or attempt to endanger the lives of railroad employes or passengers. A prosecution arose under this law in a case where a tramp or dead-head refused either to pay fare or leave the car, and the brakeman, by order of the conductor, forcibly put him off. He, in revenge, as the cars started onward, discharged a pistol at the brakeman. The Court said that it might very well be that this endangered the life of the brakeman, but that the statutes did not seem to be intended to embrace such cases. It was intended to punish wrecking of trains and kindred offenses. Shooting at a person on a train (they considered) was only punishable under the general law of the state against assaults; therefore the prisoner was discharged. The Massachusetts act above mentioned is evidently broad enough to avoid this defect.

Michigan and Nevada have passed general laws forbidding railroad companies making discriminations in freight rates, and New Hampshire has enacted that none of her railroads shall charge a higher tariff rate on like classes of freight by the car-load than is charged to deliver the same when transportation is for a greater distance.

North Carolina has enacted that no railroad company shall permit the loading or unloading of any freight car or permit any car or locomotive to be run except as absolutely necessary for the transportation of the United States mail, or in cases of urgent necessity other than business or pleasure, between sunrise and sunset of Sunday.

South Carolina now requires railroad companies receiving articles shipped to any point within the state to give, on demand by the consignee and before exacting payment of charges, a full and correct statement of the charges, showing the total amount to be paid by the consignee, and showing what proportion of the same is to be paid to each road over which, or any part of which, the freight may have passed, whether such road be beyond the limits of the state or not. And in all cases the railroad company delivering freight to a consignee must settle the freight charges according to the contract as set forth by the bill of lading from the shipping point, and is forbidden to retain the article of freight after the consignee offers to comply with the terms of the bill of lading.

New York has passed several acts besides the above-mentioned law as to police powers of conductors. One, the amendment to section 31 of the general railroad law, has been already given quite fully in the *Railroad Gazette*. Another, passed Feb. 5, 1880, purports to authorize the president, treasurer and secretary of any railroad company to issue certificates of stock, in certain cases, after a foreclosure and sale of the property and franchises of the corporation; but, as printed in the "General Statutes," it is wholly unintelligible. Unless the full volume of session laws supply its deficiencies, the enforcement of it will probably be impracticable, certainly very perplexing. There is an enabling act in favor of companies who have determined upon a reorganization, but whose capital stock is insufficient for the new plan; they may file a certificate with the Secretary of State, showing the insufficiency and the additional amount required, and may receive authority to issue additional stock. Voting by proxy at stockholders' meetings has been somewhat stringently regulated. The new law forbids issuing proxies when the certificates of stock or the bonds on which they are founded are not in the possession of and still owned by the person for whom the vote is to be cast; the fact that they stand in his name on the books is not enough. Selling a vote or issuing a proxy to any person for any money or thing of value is forbidden. Inspectors may interrogate voters, under oath, as to any violation of the law. False swearing is declared perjury, and any other violation is punishable by fine and imprisonment. By another law specific powers have been given to the companies to construct tunnels and bridges, including power to condemn rights of way underneath streets and roads. There is also an act forbidding any minor child not a passenger to be upon the platform or steps of any steam or horse

railroad car; the child disobeying is liable to arrest and fine not exceeding five dollars, and the parent or guardian who allowed him is liable to a like fine. There was an earlier act, very likely embraced by this, which forbids, under fine which may be as high as twenty dollars, any trespasser, old or young, from jumping on the trains or engines of the steam roads.

New Road from New York to Buffalo.

The New York, Lackawanna & Western Railroad Company is fully organized and announces its intention to construct a road from Binghamton to Buffalo, which, with the Delaware, Lackawanna & Western, would make a new line from New York to Buffalo. The names connected with it are chiefly those of directors of the last named road and the Wabash, and the conclusion arrived at with a large class of stock speculators is that this is evidence of a combination of the two roads, which will bring all the traffic of the Wabash to the new trunk line. These people are the same who, last fall when the great sale of New York Central stock was made, were sure that the Central was thereafter to be a part of the Wabash, and that it would have all the latter's through traffic. What has broken up this arrangement we cannot conceive, unless it is the impossibility of making any more money by speculating in stocks on the strength of it. For that business to prosper, it is necessary to have a series of great changes occurring at moderate intervals, and these are usually provided whenever it suits the interests of the speculators. It so happens that so many of the persons connected with the new trunk line are so distinguished as speculators that many do not think it much more likely that there will be a "new trunk line" now than before the company was organized. They call to mind the fact that the Rome, Watertown & Ogdensburg is largely controlled by the directors of the Delaware, Lackawanna & Western, that these two roads together already form a line from New York to the Niagara, which by a bridge and a very few miles of railroad can be connected with the Great Western of Canada, and by a few more miles of road with Buffalo, and they point out that a few years ago, when the Michigan Central, too, was under the same President, it was asserted that a new trunk line would be established by this route, which was not done.

On the other hand, it will be well to bear in mind that the great speculators sometimes effect their purposes by actually doing something as well as by pretending to do something; that the line by way of Oswego to the Niagara River is considerably longer than the competing roads, and to reach Buffalo (which to the Delaware, Lackawanna & Western is important, because of its coal shipments by lake) would have to be made still longer, and especially that what might have been an extremely profitless enterprise a few years ago, because of the unprofitableness of through rates, would be much more promising now that rates have been well maintained a whole year, while through traffic goes on increasing rapidly. The building of two hundred odd miles necessary to get from Binghamton to Buffalo is not a very formidable affair in these days. Western roads are doing such things—that is, making lines to compete with existing roads—every year without exciting any remark, and the railroads are not nearly as thick on the route proposed as in some parts of Illinois and Ohio. It is true that there is not the slightest need of a new road, but neither is there any need for the last new doctor or lawyer that has just opened an office. The railroad projectors will build if they think it will pay, and a great many railroads—parts of railroads at least—pay that are not needed, and that the country would be better off without.

On the announcement of this project Erie stock fell about 10 per cent. (of its market price), amounting to some \$3,000,000 on the amount outstanding. The unbelievers say that this was the purpose of the incorporation; but it occurs to us that it might have been that and something more. Two birds have been killed with one stone before. The route reported (quite indefinitely, however) is as near to the Erie as it would have been likely to be located by bears in Erie stock, to be sure, and in a district without large towns. As the local traffic depends upon the population and the towns to so great an extent, we suggest that the new road reach the line of the New York Central by the shortest route and follow that line to Buffalo. By doing that an immensely greater local traffic would be reached, and perhaps something handsome could be made by loading up with Erie and selling short New York Central while the line is located near the Erie, and then at the proper time announcing a change to the Central route. By the way, should such a road be built its chief west-

bound traffic would be coal, and now what the Delaware, Lackawanna & Western ships west goes by the New York Central, so that it does not escape unscathed by any means as things now stand.

Seriously, it should not seem so strange a thing that a third route between New York and Buffalo should be projected. Between Chicago and Omaha there are three, and between Chicago and Kansas City four, and the distances are greater than that from New York to Buffalo. The Western roads, however, were built chiefly for local traffic, and the local traffic in New York has been sufficiently provided for by a different arrangement of its railroad system. What a new road to Buffalo would be able to get it is not easy to say. Most of the through traffic by rail arriving there from the West is controlled to a certain extent (not wholly by any means) by the existing trunk lines. But there is an enormous traffic arriving there by lake, and no restriction on the number of steamer lines a new road might establish in its own interest. Most of the lake freight, however, must be taken in competition with the Erie Canal, and therefore at very low rates. It must be remembered that the Erie does not now control any railroad west of Buffalo, and a large part of the rail freight it gets there comes from "Vanderbilt roads," by far the largest part in the summer, however, coming by the lakes.

The project is a very different thing from a plan to build a new road all the way from New York city to Buffalo. In the first place, only half the distance has to be built over, and that on the easiest end, and more than all, no costly New York city terminus has to be provided for, and this latter, if sufficient for the accommodation of as large a traffic as that of the other trunk lines, might cost as much as 200 miles of road outside of cities. Then the eastern part of the road can supply a large amount of traffic at once from its coal mines, and the consumption of anthracite increases rapidly in all the lake cities and the surrounding towns.

Record of New Railroad Construction.

This number of the *Railroad Gazette* contains information of the laying of track on new railroads as follows:

Cumberland & Ohio, Northern Division.—The first track is laid from Shelbyville, Ky., to Norman's, 12 miles.

Chicago, Burlington & Quincy.—This company has completed its line across the Missouri at Plattsmouth, Neb., which required 3½ miles of new track.

Denver & Rio Grande.—The *San Juan Division* is completed from San Antonio, Col., westward to Boydville, 25 miles. Gauge, 3 feet.

Gulf, Colorado & Santa Fe.—Extended from Caldwell, Tex., northwest to Temple, 25 miles.

Missouri, Kansas & Texas.—The track of the *Denison Division* is extended from Leonard, Tex., southeast to Kings-ton, 17 miles.

East Line & Red River.—Extended from Sulphur Springs, Tex., west 5 miles. Gauge, 3 feet.

Shenandoah Valley.—Extended from Bentonville, Va., south by west to Milford, 4 miles.

Richmond & Allegheny.—Extended from Powhatan Furnace to Richmond, Va., 5 miles.

This is a total of 96½ miles of new railroad, making 2,950 miles thus far this year, against 1,599 miles reported at the same time in 1879, 1,123 miles in 1878, 1,108 miles in 1877, 1,388 miles in 1876, 678 miles in 1875, 984 miles in 1874, 2,408 miles in 1873, and 4,264 miles in 1872.

WATER RATES, except by sea, have fallen during the past week. Lake rates, beginning at 5½ cents a bushel for wheat and 5 for corn from Chicago to Buffalo on Thursday of last week, were maintained through that week; but Monday they fell half a cent, and Tuesday of this week were reported at 4½ and 4¼, which are nearly the lowest lake rates of this year.

Canal rates have fallen still more decidedly, and nearly all since Sunday. The quotations Tuesday of this week were 5¼ for wheat and 4¼ for corn from Buffalo to New York, having lately been 6½ and 6.

With these water rates it costs but about 10 cents per bushel to send corn from Chicago to New York, against 16.8 cents by rail. Under these circumstances only light through rail shipments can be expected except from places far to the south of the lake ports.

Ocean rates advanced a little for a time, considerable shipments being made at 7d. by steam from New York to Liverpool, but they fell again and closed at about 6½ to 6¼d.

The cost of carrying wheat from Chicago to Liverpool by water has fallen since the first week of August from 31 cents to about 24 cents a bushel. With wheat at 87 cents a bushel in Chicago and 65 cents at stations in Western Iowa and Minnesota, the lowest possible transportation rates are desirable, but the amount to be carried is so great that probably rates will not go so low as they have been often for three or four years before this.

THE GRAND TRUNK RAILWAY, on invitation, has become a member of the Trunk Line Executive Committee, which is thus much strengthened in efforts to enforce the maintenance of rates. Heretofore when there has been any disturbance the Grand Trunk and its connections were beyond the control of this body.

Southern Railway & Steamship Association.

We give below in essentially complete form the official report of the sixth annual convention in Atlanta, Aug. 11 last:

Pursuant to articles of agreement and call by the President, the sixth annual convention of the Southern Railway & Steamship Association assembled at the H. I. Kimball House, Atlanta, and was called to order by the President, at 8½ p.m. Upon call of roll, there were found present, Hon. Joseph E. Brown, President; Virgil Powers, General Commissioner; and C. A. Sindall, Secretary, officers of the Association, and Messrs. John Screven, Chairman; and Messrs. W. R. Arthur and T. H. Carter, composing the Board of Arbitration; H. N. Starnes, Secretary to the Board, and the following representatives of members of the Association and lines working with it:

Atlanta & Charlotte Air-Line, H. W. Sibley, President; G. J. Foreacre, General Manager; R. D. Carpenter, General Freight Agent.

Atlanta & West Point, L. P. Grant, Superintendent; A. J. Orme, General Freight Agent.

Carolina Central, F. W. Clark, General Freight Agent. Central Railroad & Banking Company of Georgia, W. G. Raoul, Vice-President; G. A. Whitehead, General Freight Agent.

Charlotte, Columbia & Augusta, T. M. R. Talcott, General Superintendent; Sol. Haas, General Freight Agent; D. Cardwell, Assistant General Freight Agent.

Georgia Railroad & Banking Company, C. H. Phinizy, President; E. R. Dorsey, General Freight Agent. Macon & Brunswick, J. M. Edwards, General Superintendent.

Marietta & North Georgia, Hon. Joseph E. Brown, Mobile & Girard, W. G. Raoul.

Montgomery & Eufaula, W. G. Raoul, General Superintendent; G. A. Whitehead, General Freight Agent.

Nashville, Chattanooga & St. Louis, Geo. R. Knox, General Freight Agent.

Northwestern North Carolina, T. M. R. Talcott, General Superintendent.

Port Royal & Augusta, D. C. Wilson, President; R. G. Fleming, General Superintendent; J. S. Davant, General Freight Agent.

Raleigh & Augusta Air-Line, J. C. Winder, General Superintendent.

Raleigh & Gaston, J. C. Winder, General Superintendent.

Richmond & Danville, T. M. R. Talcott, General Superintendent; Sol. Haas, General Freight Agent.

Charleston & Savannah, C. S. Gadsden, General Superintendent.

Savannah, Florida & Western, H. S. Haines, General Superintendent; J. L. Taylor, General Freight Agent.

Savannah, Griffin & North Alabama, W. G. Raoul.

Seaboard & Roanoke, J. C. Winder.

South Carolina Railroad, John B. Peck, General Superintendent.

Western Railroad of Alabama, Cecil Gabbett, General Manager.

Western & Atlantic, Hon. Joseph E. Brown, President; R. A. Anderson, General Freight Agent.

Wilmington, Columbia & Augusta, Hon. R. R. Bridgers, President; A. Pope, General Freight Agent.

Wilmington & Weldon, Hon. R. R. Bridgers, President; A. Pope, General Freight Agent.

Augusta & Savannah Steamboat Line, John Lawton, Manager.

Baltimore Steam Packet Company, J. C. Winder.

Boston & Charleston Steamship Company, John B. Peck.

Mallory Steamship Lines, D. C. Wilson.

New York & Charleston Steamship Company, John B. Peck.

Ocean Steamship Company, W. G. Raoul.

Old Dominion Steamship Company, New York, Norfolk & Richmond Lines, A. Pope.

Old Dominion Steamship Company, New York & West Point Lines, A. Pope.

East Tennessee, Virginia & Georgia, E. W. Cole, President; J. F. O'Brien, General Superintendent; J. R. Ogden, General Freight Agent.

Memphis & Charleston, E. W. Cole, Vice-President; J. R. Ogden, General Freight Agent. T. S. Davant, Assistant General Freight Agent.

Selma, Rome & Dalton, Ray Knight, General Freight Agent.

Atlantic, Mississippi & Ohio, Henry Fink, Receiver; Thomas Pinckney, General Agent.

Greenville & Columbia, F. K. Huger, General Freight Agent.

After recording representatives, the Secretary read the report of the General Commissioner, as follows:

REPORT OF GENERAL COMMISSIONER.

To the Convention of the Southern Railway and Steamship Association:

The fiscal year of the Association ends Sept. 1. It will therefore be impossible for me to submit an annual statement of business done for the fiscal year ending Sept., 1880, and comparison of business with former years. Enough has transpired, however, to develop the fact that the merchandise tonnage will have increased about 35 per cent., and revenue about 33 per cent. to principal pooled points. This is certainly very gratifying, and shows a rapid and constant improvement in the country. It also shows a general maintenance of rates, increase of revenue and general satisfaction to the patrons of the railroads, which, to a large extent, is due to the operation of our Association. There has been, and I fear will be for some time to come, if not always, some complaints of unfair dealing, paying rebates, etc., and I regret to say, judging from appearances, that the charges are in many cases too well founded. When the business is pooled and all parties pay their balances promptly, little harm can result to any but those that thus throw away the money of their roads. The principal harm is in giving advantages to one merchant over another in the same place, which is very objectionable, and should not be tolerated by any road, or the people.

The question of western business into Georgia, Alabama and South and North Carolina, as between the Green Line roads and the Eastern Lines, continues to give trouble, and it is very desirable that some equitable adjustment should be made. I see no remedy if there is to be any division at all of this business, but to pool it between Eastern and Green Lines on the same basis as other business, by agreeing upon what portion of the revenue is to be pooled, and percentages of division to certain points. I trust the Convention will give this subject full consideration.

The question of the western business into the same territory by the Western Lines themselves is getting to be serious and troublesome. If something is not done, and that soon, or much forbearance exercised by all parties interested, a great deal of money will be thrown away unnecessarily. The results of the wars in rates of the Trunk Lines on both western and eastern-bound freights should be a warning to our Southern roads. The Eastern Trunk Lines became satisfied with the results, and formed an association and pooled the west-bound business some three years ago, which has resulted in large gains to the roads and satisfaction to ship-

pers. The western connections of the Trunk Lines continued their old course of warring on each other until about a year ago, when they formed an east-bound pool, and though they have had, and still have, jars and complaints, it is working to great advantage to the roads and the public. There is no doubt that the general mismanagement of the roads in this particular has been largely the cause of the bankruptcy of so many roads, particularly in the Northwest, and it has had its influence in the same direction with our Southern roads.

I would say, then, that it will be criminal in the extreme for managers of roads, with this experience before them, not to use every reasonable means to avert wars on rates and thus general damage to railroad property. I refer particularly to the three lines from the Northwest to Atlanta, etc.—the Louisville & Nashville, the Cincinnati Southern and the Memphis & Charleston and their connections. It will certainly be better common business sense (at least), for these lines to have some reasonable understanding as to the business into and from the territory of Alabama, Georgia and North and South Carolina, than to go into a general war over it. The latter can but result in great loss to all; the former cannot result in loss to any. I therefore recommend to all those interested to leave no effort untried that may result in harmony and peace.

I would recommend a pool and division of the business to all points on basis of revenue with full and fair understanding as to all the details. This, in my opinion, is the only safe solution of that question. It may be said that this is no business of ours, but it is too well known that a war in rates in one direction inevitably leads to the same thing from the other direction when the business goes into the same territory. There are so many things that are common to both sections, that roads or lines from one section cannot submit to lower rates by the roads from another section.

The question of insurance between lines competing for the eastern business, has, and will continue to give trouble until some equitable solution of it is agreed upon. It would seem that there is common sense and conservatism enough engaged on all lines to adjust this question without resorting to extreme measures. I hope it will be done, and at once. No line can long submit to an arrangement whereby they cannot deliver goods to their patrons at the same cost as others. This, I presume, will be admitted by all.

I said in my last annual report, and here repeat the recommendation, that the passenger, as well as the freight business, be put under the control of the Association, under such rules and regulations as now govern the freight traffic, or such other rules and regulations as may be deemed necessary.

The passenger business, as conducted for some time past, has certainly not been very creditable to the railroad management. Although the freight business is not perfect by any means, still it has greatly improved under the Association, and it can certainly improve the passenger traffic. If no other thing can be done, passenger rates can be made and enforced by all lines in our Association, and violations punished, if it cannot be pooled. Reports can be made to this office of the business of each line, and upon data thus obtained, after a time, proper divisions can be arrived at by compromise and concessions, if it cannot be done at once. The fearful loss of revenue in these fights over freight and passenger business loses much more money to each railroad than can possibly be lost by an error in divisions of the business on full rates. It will, therefore, in my opinion, be best to agree upon divisions as early as practicable, and correct them from time to time, as information is obtained on which they can be corrected. By this course much money can be saved to all interested.

I am aware that the revised rule, as adopted by the Association at their meeting in December, 1879, rescinded the agreement as to passengers. I have never seen any good reason for this. The passenger business into this section is comparatively small and unprofitable, but properly and fairly managed, might materially aid in the support and prosperity of the roads. Instead, it is very much like the freight management was a few years since, no credit to the managers of the railroad property, and little or no profit to the railroads. There is no question that the interest of the roads would be benefited by placing the passenger business under the control of your Association. I do not see that the general passenger agents or managers are better or more reliable business men than those managing the freight department, and there is no reason why they should not be brought under the same restraints as to rules, regulations, etc. The northern lines have some arrangements, at least, to ascertain the value of this business, and I presume are gathering statistics to learn what is thrown away unnecessarily, and devise some plan to prevent it in future, by pooling the business. It is time that our Association was looking into this matter with a view of arriving at some better plan of managing it.

The agreement between the Association and the Virginia & Tennessee Air-Line expires Sept. 1. I would recommend that some arrangement be made for another year, both as to north-bound as well as south-bound business.

I have to report that 56 companies paid the annual assessment for 1880 of \$250 each, making the sum of \$14,000, which has been used to pay expenses of the Association, beginning with April, 1880, and which will about pay five months' expenses, ending with August, 1880. The names of these 56 companies are as follows: *

Respectfully submitted, VIRGIL POWERS, General Commissioner.

On motion of Mr. Bridgers, the report was received and ordered incorporated in the proceedings of the Convention. Mr. Bridgers moved to change the time of holding the annual conventions hereafter, to the fourth Wednesday in October of each year. Motion adopted.

Col. Peck stated that the Rate Committee were in session, and in order to enable them to continue their work, and also because of detention of some representatives en route, he moved that the Convention adjourn until 10 a. m., 12th inst. Carried.

SECOND DAY.

The Convention reassembled at 10 a. m. Present all recorded in session of 11th, and the following additional: Gen. E. P. Alexander, Vice-President Louisville & Nashville, and Vice-President Georgia Railroad & Banking Company; Hon. A. C. Haskell, President Charlotte, Columbia & Augusta; Gen. William McRae, General Manager Western & Atlantic; J. M. Culp, General Freight Agent Louisville & Nashville, and South & North Alabama; C. I. Brown, Director Central Railroad & Banking Company of Georgia; Milo S. Freeman, Clearing House Agent of the Association.

Col. Cole moved that the present Rate Committee be continued for another year (1881), and that Mr. James R. Ogden be added to the Rate Committee. Carried.

The motion by Col. Cole that the Convention proceed to the election of officers, having been adopted, Col. Cole moved that the present officers, including Board of Arbitration, be elected for the year 1881, by acclamation. Carried.

Mr. H. W. Sibley moved that the resolution adopted by the Convention of Dec. 18, 1879, providing for the removal of the office of the General Commissioner from Macon, Ga., to Atlanta, Ga., be rescinded. Carried.

RAILROAD EARNINGS IN JULY.

NAME OF ROAD.	MILEAGE.					EARNINGS.					EARNINGS PER MILE.	
	1880.	1879.	Inc.	Dec.	Per c.	1880.	1879.	Increase.	Decrease.	Per c.	1880.	1879.
Alabama Gt. Southern	290	290				\$ 47,525	\$ 32,790	\$ 14,735		44.9	\$ 164	\$ 113
Burlington, Cedar Rapids & North	492	434	58		13.4	143,432	107,990	35,442		32.8	292	249
Cairo & St. Louis	146	146				35,146	22,520	12,626		56.1	241	154
Central Pacific	2,481	2,290	171		7.5	1,790,000	1,458,833	331,167		20.7	715	637
Chesapeake & Ohio	435	435				235,525	173,383	62,142		35.8	541	399
Chicago & Alton	840	840				670,317	536,843	133,474		24.9	798	639
Chicago & Eastern Illinois	220	159	61		38.4	114,129	69,437	44,692		71.8	519	418
Chicago, Milwaukee & St. Paul	3,111	1,767	1,324		74.1	1,028,000	773,172	254,828		32.7	350	438
Chicago & Northwestern	2,554	2,159	395		18.3	1,710,531	1,314,231	396,300		30.6	672	609
Chicago, St. Paul, Minn. & Om.	268	240	28		11.7	114,081	79,857	34,224		42.8	426	333
Cin. Hamilton & Dayton	345	345				245,060	197,404	47,656		24.1	711	572
Cleve. Col. Cin. & Ind.	472	472				469,488	377,936	91,552		24.2	995	801
Cleveland, Mt. Vernon & Del.	157	157				30,681	29,379	1,302		4.4	185	187
Denver & Rio Grande	505	337	168		49.5	372,190	86,072	286,118		332.3	737	255
Denver, South Park & Pacific	151	85	66		77.0	140,900	70,354	70,546		106.2	833	828
Detroit, Lansing & Northern	224	201	23		11.9	89,340	70,845	18,495		26.2	399	382
Eastern	282	282				781,842	247,633	534,209		13.8	999	878
Flint & Pere Marquette	289	280	9		6.8	113,988	70,410	43,578		61.8	381	283
Hannibal & St. Joseph	282	282				163,484	99,810	63,674		63.8	560	342
Illinois Central, Illinois lines.	898	854	44		5.2	561,339	468,017	93,322		19.9	625	548
" Iowa lines.	402	402				130,248	105,233	25,015		23.8	324	262
Ind. Bloom. & Western	212	212				103,438	88,549	14,889		16.8	488	418
International & Great Northern	529	529				116,141	98,295	17,846		18.2	221	187
Kan. City, Ft. Scott & Gulf	176	169	7		4.0	101,660	70,607	31,053		44.1	218	247
Kansas City, Lawrence & So.	272	167	105		63.0	59,304	41,233	18,071		44.1	218	247
Lake Erie & Western	360	301	59		21.6	118,352	49,472	68,880		139.2	324	164
Louisville & Nashville	1,702	973	729		74.9	727,100	419,246	307,854		73.4	427	431
Memphis, Pad. & No.	115	115				17,664	15,320	2,344		15.3	154	133
Missouri, Kansas & Texas	789	789				325,167	258,659	66,508		25.7	414	329
Mobile & Ohio	506	506				130,090	110,491	19,599		17.7	257	218
Nash. Chattanooga & St. Louis	349	349				151,594	133,590	18,004		13.5	494	382
N. Y. Central & Hudson River	1,019	1,018	1		0.1	2,963,316	2,194,422	768,894		35.5	2,809	2,153
N. Y. & New England	279	275	4		1.4	207,712	189,003	18,709		9.9	755	688
Northern Central	326	326				450,297	324,424	125,873		38.8	1,381	995
Northern Pacific	714	644	70		10.9	235,248	192,324	42,924		21.8	330	299
Ogdensburg & Lake Cham.	122	122				48,644	43,691	4,953		11.3	399	358
Paducah & Elizabethtown	185	185				31,738	27,290	4,448		16.3	172	148
Pennsylvania	1,814	1,716	98		5.7	3,449,644	2,782,906	666,738		23.8	1,902	1,622
Philadelphia & Reading	929	929				1,282,834	1,303,521		20,687	1.6	1,385	1,408
Pitts., Trueville & Buffalo	163	129	34		35.8	54,960	38,351	16,609		42.8	395	315
St. L. Alt. & T. H. Main Line	195	195				133,048	92,363	40,685		44.0	682	404
St. L. Alt. & T. H. Bellev. L. E.	71	71				46,180	37,778	8,402		22.2	650	532
St. Louis, Iron Mt. & Southern	685	685				442,000	332,107	109,893		33.1	645	482
St. Louis & San Francisco	592	368	226		61.7	213,956	126,959	86,997		68.5	361	347
St. Paul, Minn. & Manitoba	674	500	174		20.4	272,089	241,339	30,750		12.7	404	431
St. Paul & Sioux City	509	329	180		54.7	113,314	81,452	31,862		39.1	223	247
Scioto Valley	100	100				33,959	24,129	9,830		40.8	340	241
Southern Pacific, North Div.	179	161	18		9.3	87,000	80,801	6,199		7.0	404	352
Texas & Pacific	475	444	31		7.0	195,711	182,113	13,598		7.0	404	352
Toledo, Peoria & Warsaw	237	237				112,206	103,843	8,363		8.1	473	438
Union Pacific	2,502	1,821	681		37.4	1,988,000	1,431,000	557,000		38.9	795	786
Wabash, St. L. & Pacific	1,070	1,226	444		36.2	1,065,080	671,984	393,096		58.5	638	547
Total, 52 roads	33,284	28,109	5,175		18.4	23,627,258	18,171,822	5,455,436		30.0	710	647
Total increase			5,175		18.4			5,455,436		30.0		

RAILROAD EARNINGS, SEVEN MONTHS ENDING JULY 31.

NAME OF ROAD.	MILEAGE.					EARNINGS.					EARNINGS PER MILE.				
	1880.	1879.	Inc.	Dec.	P.c.	1880.	1879.	Increase.	De-crease.	P. c.	1880.	1879.	Inc.	Dec.	P. c.
						\$	\$	\$	\$		\$	\$	\$	\$	
Ala. Gt. Southern	290	290				332,292	220,142	112,150		50.9	1,145	759	386		50.9
Bur. Ced. Rap. & No.	492	434	58		13.4	1,125,778	761,814	363,964		47.8	2,288	1,755	533		30.3
Cairo & St. Louis	146	146				212,525	132,609	79,916		60.2	1,456	900	547		60.2
Central Pacific	2,392	2,244	148		6.6	10,244,255	9,314,241	930,014		10.0	4,283	4,151	132		3.1
Chesapeake & Ohio	435	435				1,404,560	986,191	418,369		51.6	3,436	2,267	1,169		51.6
Chicago & Alton	840	740	100		13.4	4,086,202	2,720,756	1,365,446		50.2	4,865	3,677	1,188		32.3
Chi. & Eastern Illinois	185	159	26		16.4	400,861	259,483	141,378		43.4	2,146	1,394	752		22.3
Chi. Mil. & St. Paul	2,537	1,773	763		43.0	8,473,000	4,808,331	3,664,669		36.7	5,251	2,710	2,540		150
Chi. & N. W.	2,328	2,159	169		7.8	10,120,326	8,274,563	1,845,763		22.3	4,347	3,833	514		13.4
Chi. St. Paul, Minn. & Omaha	268	240	28		11.7	807,590	630,603	176,987		28.1	3,013	2,627	386		14.7
Cleve. Col. Cin. & Ind.	472	472				2,722,824	2,153,724	569,100		26.5	5,769	4,569	1,200		26.5
Cleve., Mt. V. & Del.	157	157				239,749	212,629	27,120		12.8	1,527	1,354	173		12.8
Denver, So. Park & P.	148	85	63		75.3	1,238,533	308,683	929,850		301.2	8,368	3,632	4,736		130.5
Eastern	282	282				1,613,051	1,363,825	249,226		18.3	5,720	4,830	890		18.3
Flint & Pere Mar.	289	280	9		5.7	857,102	597,019	259,483		43.4	2,896	2,134	762		35.8
Grand Trunk	1,273	1,300	16		11.7	5,748,799	4,709,815	1,038,984		20.5	4,516	3,432	1,084		31.6
Great Western	529	529				2,751,531	2,341,304	410,227		17.5	5,231	4,451	780		17.5
Hannibal & St. Jo.	292	292				1,300,037	992,809	307,228		30.9	4,452	3,400	1,052		30.9
Ill. Cen., Ill. lines	877	854	23		2.7	3,361,533	2,960,477	401,056		12.2	3,833	3,509	324		9.2
Ill. Cen., Iowa lines	402	402				884,348	804,675	79,673		9.9	2,200	2,002	198		9.9
Ind., Bloom. & West.	212	212				673,142	611,699	61,443		10.0	3,175	2,885	290		10.1
Inter. & Gt. Northern	529	518	8		1.6	833,693	782,588	51,105		6.5	1,585	1,511	74		4.9
Kan. C'y. Ft. S. & Gulf	176	160	16		10.0	630,609	447,704	182,905		40.9	3,580	2,784	796		28.2
Kan. C'y. Law. & So.	253	207	46		21.5	403,074	273,721	129,353		31.1	1,536	1,048	488		7.6
Louisville & Nash.	1,398	973	425		45.7	4,878,580	3,048,001	1,830,579		55.5	3,346	1,393	2,133		6.8
Menn., Paducah & No.	115	113				113,364	88,900	24,464		27.5	990	773	217		27.5
Minn. & St. Louis	158	123	35		28.5	3,853,500	2,411,131	1,442,319		58.2	4,229	1,900	2,407		23.9
Missouri, Kan. & Tex.	780	780				2,335,928	1,501,466	804,462		53.9	2,934	1,910	1,024		53.1
Mobile & Ohio	500	516		10	1.9	1,133,218	967,070	166,148		17.2	2,240	1,874	366		19.1
Nash., Chatta. & St. L.	349	349				1,176,290	971,477	204,822		21.1	3,370	2,784	586		21.6
N. Y. C. & Hud. R.	1,018	1,018				18,605,794	15,352,300	3,253,494		21.2	18,287	15,081	3,206		21.2
Northern Central	329	326				2,066,088	2,158,945	507,143		23.6	8,178	6,632	1,546		23.6
Northern Pacific	675	644	31		4.8	1,145,279	901,506	243,713		27.0	1,607	1,406	207		21.2
Ogdensburg & L. Cham.	122	122				238,148	207,478	76,670		37.0	2,329	1,701	628		37.0
Pad. & E. town	185	185				210,055	156,783	53,272		33.9	1,135	847	288		33.9
Pennsylvania	1,808	1,716	92		5.3	22,883,715	18,196,964	4,686,751		25.8	12,657	10,604	2,053		19.3
Phila. & Reading	926	845	81		9.6	9,472,301	7,998,189	1,474,112		18.4	10,229	9,467	762		8.1
Pitts., Titusv. & Buff.	151	120	31		25.8	316,639	270,672	45,967		17.0	2,097	2,256		159	7.0
St. L., A. & T. H. M. L'e	195	195				753,131	492,610	260,521		52.9	3,862	2,529	1,336		52.9
St. L., A. & T. H. B. Line	71	71				344,020	285,544	58,476		20.5	4,845	4,021	824		20.5
St. L., Iron Mt. & So.	985	985				3,060,486	2,261,262	799,227		35.3	4,438	3,393	1,165		35.3
St. Louis & San Fran.	543	339	204		60.2	1,346,818	646,818	699,999		54.5	2,463	1,068	1,395		54.5
St. Paul & Sioux City	476	329	147		44.7	755,943	577,636	178,307		30.3	5,588	7,756		98	9.6
Scioto Valley	100	100				168,703	148,199	20,504		13.9	1,687	1,482	205		13.9
Toledo, Peoria & W.	237	237				772,902	678,109	94,793		14.0	3,261	2,861	400		14.0
Wab., St. L. & Pacific	1,571	1,218	353		29.0	6,378,938	4,311,720	2,067,218		47.9	4,060	3,540	520		14.7
Total, 40 roads	28,206	25,430	2,993	127		137,740,614	108,397,167	29,343,447		4.883	4,263	620			14.5
Total increase			2,776		10.9			29,343,447		27.1					

Kimball House for courtesies extended, use of rooms, etc., and that this Convention do now adjourn. Carried, and the Convention then adjourned.

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings will be held as follows:
Nashville, Chattanooga & St. Louis, annual meeting, at the office in Nashville, Tenn., Sept. 15.

Dividends.

Dividends have been declared as follows:
Eel River (leased to Wabash, St. Louis & Pacific), 0% per cent., quarterly, payable Sept. 15.
Iowa Falls & Sioux City (leased to Illinois Central), 1 per cent., payable Sept. 1.
Chicago, Burlington & Quincy, 2 per cent., quarterly, payable Sept. 15.

Mail Service Extensions.

Mail service has been ordered over the Southern Pacific road from Yuma, Arizona, to Benson, 294 miles, to begin Sept. 20. It will be extended as the road is opened for traffic eastward.

National Association, General Passenger & Ticket Agents.

The following circular is issued by the Secretary, Mr. A. J. Smith:

The second semi-annual meeting of the Association will be held in New York City, at the rooms of the National Railway Publication Co., No. 46 Bond street, commencing Tuesday, Sept. 21, at 11 o'clock a. m.

Blank credentials will be furnished by the Secretary at the meeting.

The following was adopted at the Cincinnati meeting of March, 1880:

"Resolved, That immediately after the election of officers the President shall appoint a committee of fifteen or more (with the privilege of adding thereto at any time), to serve for one year, on the making of passenger rates, which committee shall serve during the sitting of the Convention."

It was further ordered that the committee should be appointed by roads.

In accordance with this action, the committee as appointed and organized is as follows:

—Mr. H. R. Dering, of the Jeffersonville, Madison & Indianapolis, Chairman; Pennsylvania Company; Missouri, Kansas & Texas; Louisville, Nashville & Great Southern; New York, Pennsylvania & Ohio; Hannibal & St. Joseph; Chicago, Burlington & Quincy; Atlantic Coast Line; Cincinnati, Hamilton & Dayton; St. Louis, Iron Mountain & Southern; Illinois Central; Piedmont Air Line; Central Short Line; Savannah & Charleston; Jeffersonville, Madison & Indianapolis; Chicago, St. Louis & New Orleans; Pittsburgh, Cincinnati & St. Louis; Cleveland, Columbus, Cincinnati & Indianapolis; Pennsylvania Railroad; Lake Shore & Michigan Southern; Wabash, St. Louis & Pacific; New York, Lake Erie & Western; Missouri Pacific; Baltimore & Ohio; Chicago & Northwestern; Chicago, Rock Island & Pacific; Columbus & Toledo; Columbus & Hocking Valley; Michigan Central; Savannah, Florida & Western; Central Railroad of Georgia.

August Meeting of the Trunk Line Executive Committee.

The meeting assembled, pursuant to call at the Commissioner's office, No. 346 Broadway, Thursday, Aug. 26. Representatives were present from the following railroads: Baltimore & Ohio; Boston & Albany; Boston, Hoosac Tunnel & Western; Canada Southern; Central Vermont; Cincinnati, Hamilton & Dayton; Chicago, Burlington & Quincy; Chicago & Grand Trunk; Evansville & Terre Haute; Evansville, Terre Haute & Chicago; Fitchburg; Grand Trunk; Grand Rapids & Indiana; Great Western; Indianapolis & St. Louis; Indiana, Bloomington & Western; Illinois Midland; Chicago & Alton; Cleveland, Columbus, Cincinnati & Indianapolis; Lake Shore & Michigan Southern; Louisville, Cincinnati & Lexington; Louisville & Nashville; Marietta & Cincinnati; Michigan Central; New York Central & Hudson River; New York, Lake Erie & Western; New York & New England; New York, Pennsylvania & Ohio; Ohio & Mississippi; Pennsylvania; Pennsylvania Company; Peoria, Pekin & Jacksonville; Philadelphia, Wilmington & Baltimore; Pittsburgh, Cincinnati & St. Louis; Troy & Boston; Vandalia, and the Wabash, St. Louis & Pacific. Only six of the roads belonging to the pool were not represented. The condition of the pools at Cincinnati, St. Louis, Chicago and Peoria was referred to the committees at those places. These committees will consider the condition of the balances at each point, and will report any action necessary for a more perfect equalization of tonnage. The question of establishing pools at Vincennes, Terre Haute and LaFayette was referred to the proper committees for consideration. A similar course was taken with regard to the pooling of business from Ontario. Announcement was made of the death of Major J. E. Simpson, General Manager of the Vandalia Railroad, which occurred last month, and a committee was appointed to prepare suitable resolutions expressing the sense of the loss felt by the Executive Committee.

An afternoon session was called to hear reports from committees, but as no reports were ready an adjournment was taken until noon next day. The subjects to be discussed and acted upon were as follows: Classification and rates of tobacco and cotton; a request of the Southwestern Railway Association that the Eastern roads should withdraw their agents from points west of the Mississippi River; the withdrawal of agents of Western roads in the East. One of the objects of the managers of the Southwestern roads was to endeavor to induce the trunk lines to adopt measures in regard to charging freight by actual weight, similar to the system adopted lately by the Southwestern and Western roads.

The session was continued Friday, the 27th.

The local committees at Cincinnati, Indianapolis, St. Louis, and Chicago handed in their reports of the condition of the pools in those cities, which were duly placed on file. Some of the members of the Peoria committee were absent, and no report from that city was received. The committees for establishing arrangements for a division of business at Terre Haute, Vincennes, and La Fayette, reported they were not ready to recommend any action as yet, and the matter was laid over. Preliminary proposals were made regarding La Fayette, but no action was taken, except to request Commissioner Fink to correspond with the Lake Erie & Western Company on the subject. The committee on Vincennes are to hold another meeting at an early date. No report was received from the committee on the Ontario and Detroit division, as it had not had time to act. Having thus been informed that there were no reports from most of the sub-committees, the Joint Committee proceeded to transact some business. Commissioner Fink was instructed to see

that the resolution calling upon the lines at seaboard terminal points to collect freights on the actual gross weights of shipments of whisky, alcohol, etc., was rigidly carried out by all the lines. The committee on cotton rates reported in favor of the following schedule: For east-bound cotton, uncompressed, per 100 lbs., all rail, to New York from the points named—Memphis, Tenn., 74 cents; Nashville, Tenn., 67 cents; St. Louis, Mo., 66 cents; Hannibal, Mo., 46 cents; East St. Louis, Ill., 62 cents; East Hannibal, Ill., 62 cents; Cairo, Ill., 65 cents; Evansville, Ind., 63 cents; Louisville, Ky., 56 cents; Jeffersonville, Ind., 56 cents; New Albany, Ind., 56 cents; Cincinnati, O., 53 cents. The rate per 100 lbs. from Memphis, Tenn., to New York by river and rail was fixed at 72 cents, and then the report of the committee was adopted, to go into effect Sept. 7. It was decided to have a permanent committee on cotton rates, and Messrs. Culp, Martin, Pennington, Ripley, Hibbard, Gays, Geiger, Smith and Fraser were appointed as such.

A discussion then arose over the request of the Southwestern Railway Association that the fast freight and dispatch agents be withdrawn from Missouri River points. The matter was finally referred to the Trunk Line Executive Committee for its consideration and action.

A resolution was adopted to the effect that, as roads west of Buffalo and Pittsburgh had decided to weigh and charge for the actual weight of shipments of wagons, agricultural implements, and other car-load property, the trunk lines be requested to adopt same rule and practice.

An adjournment was then taken, subject to the call of Commissioner Fink.

ELECTIONS AND APPOINTMENTS.

Bangor & Portland.—Mr. E. Miller is President of this company. The company's office is at Bangor, Northampton County, Pa.

Boston & Albany.—The following circular is dated Aug. 27:

"Mr. A. B. Underhill is appointed Superintendent of Motive Power, and will enter upon the duties of the office Sept. 1, with headquarters at Springfield, Mass.

"The office of Master Mechanic will be abolished Nov. 1, and the shops will be put in charge of foremen who will report to Mr. Underhill."

Central, of New Jersey.—Mr. Joseph S. Harris has been appointed General Manager, and entered upon the duties of his position Sept. 1. The office is a new one on this road.

Mr. Harris is an engineer of wide experience. Early in life he was employed upon government surveys, and was afterward engaged as engineer in the construction of the North Pennsylvania and the Lehigh Valley roads. Still later he was chief engineer of the Morris & Essex, and built the Boonton Branch of that road. He was afterward for several years connected with the firm of Harris Brothers, of Pottsville, Pa., and for several years past has been Superintendent and Mining Engineer of the Lehigh Coal & Navigation Company. He is considered an authority on coal mining and coal property; was some time ago employed to make an examination of the Pennsylvania Railroad Company's coal lands, and recently was one of the experts chosen to appraise the property of the Philadelphia & Reading Coal & Iron Company.

Chicago, St. Paul, Minneapolis & Omaha.—Mr. G. H. Daniels has been appointed Road-Master of the Eastern Division, in place of D. M. Sullivan, resigned.

Decatur, Springfield & Roadhouse.—The directors of this new company are: Bluford Wilson, David T. Littler, L. W. Shepherd, Springfield, Ill.; St. John Boyle, Louisville, Ky.; Edward C. Rice, St. Louis; Parker C. Chandler, James H. Wilson, Boston.

Indianapolis & St. Louis.—Mr. Charles A. Allen has been appointed Train-Master of the Eastern Division. He has been conductor for some time past; he began as a laborer on the road when it was first built, and has been with it ever since, gradually and steadily working his way up.

Mr. E. R. Mark has been appointed Train-master of the Western Division.

Manchester & Keene.—Mr. John Mulligan has been appointed Agent and Manager for the trustees. He is Superintendent of the Connecticut River Railroad, and that company will operate the road.

Manhattan Elevated.—Mr. A. H. Barney has been chosen a director in place of Cyrus W. Field, resigned. Mr. Barney was one of the original directors, but resigned some time ago.

Missouri Pacific.—The directors of the consolidated company, as named in the articles of consolidation filed as heretofore noted are: S. T. Smith, Leavenworth, Kan.; S. H. H. Clark, Omaha, Neb.; John L. Stephens, Booneville, Mo.; D. K. Ferguson, Oliver Garrison, Webb M. Samuel, St. Louis; Frederick L. Ames, North Easton, Mass.; Wm. F. Buckley, Sidney Dillon, Thomas T. Eckert, George J. Forrest, Jay Gould, Russell Sage, New York.

New York, Lackawanna & Western.—The directors of this new company have chosen the following officers: President, Samuel Sloan; Secretary, F. F. Chambers; Treasurer, F. H. Gibbens; Assistant Treasurer, A. D. Chambers; Executive Committee, Samuel Sloan, Percy R. Pyne, George Bliss, Benjamin G. Clarke, Solon Humphreys, Jay Gould, Russell Sage.

New York, Lake Erie & Western.—Mr. Charles A. Brunn will have charge of the lately leased Buffalo & Southwestern road as Assistant Superintendent under Mr. J. S. Beggs, Superintendent of the Western Division.

Northeastern, of Georgia.—Mr. Lyman Wells has been appointed Superintendent. Mr. H. R. Bernard, late Acting Superintendent, continues Auditor.

Pittsburgh & Western.—Mr. James Callery, President of the company, will for the present act as Superintendent also, in place of G. A. Woerth, resigned.

Quebec, Montreal, Ottawa & Occidental.—Mr. W. E. Blumhart has been appointed Purchasing Agent, in place of Mr. A. McPherson.

Schuylkill & Lehigh.—The officers of this company, successor to the Reading & Lehigh, are: President, J. N. Hutchinson; Secretary and Treasurer, George D. Stitzel; Superintendent, Harrison Bright. The offices are in Reading, Pa., except that of the President, which is in Philadelphia.

South Pacific Coast.—Mr. F. W. Bowen has been appointed Superintendent. He was at one time Superintendent of the Sacramento Division of the Central Pacific, was afterward on the Missouri, Kansas & Texas for a time, and more recently in the Pay Department of the Central Pacific.

Springfield, St. Louis & Louisville.—The directors of this new company are: Bluford Wilson, David T. Littler, L. W. Shepherd, Springfield, Ill.; Johnathan Merriam, Tazewell,

Ill.; Robert M. Vandoren, Hillsboro, Ill.; A. G. Henry, Greenville, Ill.; H. P. Buxton, Carlyle, Ill.; T. B. Needles, Nashville, Ill.; S. John Jovic, Louisville, Ky.; Edward C. Rice, St. Louis; Gen. J. H. Wilson, Boston.

PERSONAL.

—Mr. Cyrus W. Field has resigned his position as a director of the Manhattan Elevated Railway Company.

—Mr. G. A. Woerth has resigned his office as Superintendent of the Pittsburgh & Western road, to accept a position on another road.

—Mr. John S. Barbour, President and Receiver of the Washington City, Virginia Midland & Great Southern, is the Democratic candidate for Congress in the Alexandria District in Virginia.

—Mr. George Sanderson has resigned his office as General Freight Agent of the Indianapolis, Decatur & Springfield road, and will, it is said, accept a position on the Chicago & Eastern Illinois Railroad.

—Mr. John W. Brown, General Passenger Agent of the Indiana, Bloomington & Western road, has under consideration an offer to engage in business at Columbus, O. He has not yet resigned his position.

—Mr. George O. Clinton, who lately left the Chicago, Milwaukee & St. Paul to accept the position of Freight Agent and Yard-Master in Chicago of the Wabash, St. Louis & Pacific, has been presented with a fine gold watch by the yardmen on his old road.

—Mr. John Swann, who has been General Manager of the Alabama Great Southern road since it passed into the hands of the present company, recently resigned. He is now in England, but expects soon to return to Alabama, where he will probably establish an agency to deal in land and promote immigration.

—Mr. DeWitt Clinton West, for many years a prominent merchant and banker of Central New York, died Aug. 27 at his house in Lowville, N. Y. He was one of the first projectors and advocates of the Utica & Black River road and was a director of the company for many years. In 1873 he was chosen President and held that office until last year, when he resigned on account of failing health. Mr. West served in the New York Legislature for several years, and was at one time a prominent candidate for Governor before the Democratic convention.

—The following circular has been issued by the Boston & Albany Company:

"Mr. Wilson Eddy, after 40 years' continuous service, has resigned his office of Master Mechanic, to take effect Nov. 1. The board of directors accepted Mr. Eddy's resignation, at a meeting held in Boston Aug. 26, and adopted the following resolution offered by Mr. Kimball:

"That in accepting the resignation of Wilson Eddy, Esq., Master Mechanist at Springfield, the directors desire to place on record their recognition of his long extended term of skillful service and devotion to the interests of the company, and to express a wish for his continued health and future welfare."

TRAFFIC AND EARNINGS.

Railroad Earnings.

Earnings for various periods have been reported as follows:

	1870-80.	1878-79.	Inc. or Dec.	P. c.
Year ending June 30:				
St. P., Minn. & Manitoba.	\$2,885,330	\$1,000,529	\$1,884,801	51.8
Three months ending June 30:				
1880.				
Chi., R. Island & Pac.	\$2,771,224	\$2,371,181	\$400,043	16.9
Month of June:				
Chi., R. Island & Pac.	\$956,233	\$775,230	\$181,003	23.4
Month of July:				
N. Y., Penna. & Ohio.	\$433,538	\$360,041	\$73,497	20.4
First week in August:				
Min. & St. Louis.	\$15,847	\$11,102	\$4,745	42.7
Third week in August:				
Chi. & Alton.	\$195,045	\$153,435	\$41,610	27.1
Chi. & Eastern Illinois.	36,579	19,923	16,656	83.7
Hannibal & St. Joseph.	48,750	32,040	16,710	48.1
St. L., Iron Mt. & So.	142,100	101,302	40,798	40.3
Texas & Pacific.	54,293	43,838	10,455	23.9
Wabash, St. L. & Pac.	321,182	192,626	128,556	66.7
Week ending Aug. 13:				
Great Western.	\$100,156	\$78,227	\$21,929	28.0
Week ending Aug. 21:				
Grand Trunk.	\$201,623	\$165,016	\$36,607	21.2

Coal Movement.

Coal tonnages are reported as follows for the week ending Aug. 21:

	1880.	1879.	Inc. or Dec.	P. c.
Anthracite.	430,596	525,647	D. 95,051	18.1
Semi-bituminous.	78,978	84,880	D. 5,908	8.0
Bituminous, Penna.	40,316	44,301	D. 3,985	8.8
Coke, Pennsylvania.	3,149	29,852	L. 26,703	19.5

The anthracite companies will generally resume work on full time on Sept. 6, and will continue to run full time for the present.

A coal-boat rise in the Ohio last week, though comparatively small, took out from Pittsburgh 1,868,600 bushels of coal and coke. The largest shipments were 1,527,000 bushels of coal to Cincinnati, and 210,000 bushels of coke to St. Louis.

Grain Movement.

For the week ending Aug. 21, receipts and shipments of grain of all kinds at the eight reporting Northwestern markets, and receipts at the seven Atlantic ports, have been, in bushels, for the past eight years:

Year.	Northwestern Shipments.				Atlantic Receipts.			
	Northwestern	Total.	By rail.	P. c.	Atlantic	Receipts.	By rail.	P. c.
1873.	6,865,938	3,225,712	647,364	20.1	3,241,737			
1874.	5,063,941	3,165,646	606,194	19.2	3,480,346			
1875.	4,420,085	3,146,585	1,032,704	32.8	1,664,312			
1876.	4,280,052	3,872,963	1,520,811	39.3	3,227,690			
1877.	5,331,315	4,632,809	1,036,221	22.6	4,493,252			
1878.	9,015,180	5,725,812	1,303,453	22.8	6,823,013			
1879.	6,559,199	6,238,710	1,818,087	29.1	7,439,049			
1880.	7,747,247	6,780,435	2,032,203	29.9	7,696,271			

Compared with last year there is an increase this year of 18 per cent. in Northwestern receipts, of 8% per cent. in Northwestern total shipments, and of 10 per cent. in rail shipments, and of 3 per cent. in Atlantic receipts.

The Northwestern receipts have been exceeded four times this year, but twice in 1879, but in 1878 they were exceeded every one of the four weeks ending Sept. 7, which was the heaviest four weeks' receipts ever known.

The Northwestern shipments were also very large, but have been exceeded four times this year, though but twice last year and never in any previous year.

The Atlantic receipts are 6 per cent. less than the previous week and are the smallest for ten weeks, yet they were exceeded but six times in 1879, but once in 1878 and never before.

Of the Northwestern receipts for the week this year, Chicago had 51 per cent., Toledo 15.4, St. Louis 14.2, Peoria 8.9, Detroit 3.1, Cleveland 2.8, Milwaukee 2.6, and

Duluth 2 per cent. The Toledo and St. Louis receipts continue to be exceptionally large, and are chiefly wheat. Corn, however, is more than half of the total receipts, and 72 per cent. of it went to Chicago.

Of the Atlantic receipts, New York had 40.7 per cent., Baltimore 19.8, Philadelphia 13.1, Montreal 11.9, Boston 11.4, New Orleans 2.3, and Portland 0.8 per cent. New York's receipts have not been so small before for a long time; Baltimore's, Montreal's and Boston's are larger than usual, Montreal's having never been equaled before, we believe. While but 33 per cent. of the receipts of the Northwestern markets were wheat, 61½ of those of the Atlantic ports were of that grain.

The exports of grain and flour from Atlantic ports for four successive weeks have been:

	Aug. 25.	Aug. 18.	Aug. 11.	Aug. 4.
Flour, bbls.....	110,191	97,585	70,183	110,477
Grain, bush.....	6,444,497	8,161,392	6,405,959	7,986,582

The grain exports of the last week were thus 21 per cent. less than the week before.

The Buffalo Commercial Advertiser reports the receipts at that point up to Aug. 31 as follows, flour in barrels and grain in bushels:

	1880.	1879.	1880.	1879.
By lake.....	713,308	461,593	96,380,773	54,885,772
By rail.....	622,100	851,000	23,178,000	29,871,400
Total.....	1,335,408	1,312,593	119,558,773	84,757,172
P. c. by rail.....	46.6	64.3	25.9	46.1

Shipments eastward of grain received by lake for the same period were as follows, in bushels:

	1880.	1879.	Inc. or Dec.	P. c.
By canal.....	44,159,101	24,636,564	19,522,537	79.2
By rail.....	19,205,351	8,256,200	10,949,151	132.1
Total.....	63,364,452	32,892,764	30,471,688	92.6
Per cent. by rail.....	30.3	25.1	5.2	20.7

The canal opened April 20 this year and May 8 last year, making 18 days more of navigation this year than last.

Baltimore grain receipts for August were as follows, flour in barrels and grain in bushels:

	1880.	1879.	Inc. or Dec.	P. c.
Flour.....	125,487	110,379	15,108	13.8
Wheat.....	6,837,090	5,548,110	1,288,980	23.2
Corn.....	193,038	457,772	-264,734	-57.8
Other grains.....	167,946	206,543	-38,597	-36.9
Total.....	7,198,674	6,272,425	926,249	14.8

Total flour, reduced to wheat, 7,826,109, 6,824,320, 1,001,789, 14.7.

For the eight months ending Aug. 31 the receipts were:

	1880.	1879.	Inc. or Dec.	P. c.
Flour, barrels.....	739,562	804,904	-65,342	-8.1
Grain, bushels.....	37,211,413	38,027,704	-816,291	-3.7
Total, bushels.....	40,950,223	42,652,224	-1,702,001	-4.1

August exports were 4,112 sacks and 39,248 barrels flour, and 6,633,648 bushels grain.

Cotton Rates.

The following rates were established by the Rate Committee of the Southern Railway & Steamship Association at its recent meetings:

	Brunswick	Savannah	Port Royal	Wilmington	Richmond	Baltimore	Phila. and New York	Boston, Providence and Fall River
Per bale, in cents:								
Columbia, S. C.....	125	125	175	225	250	275		
Charlotte, N. C.....	150	135	165	215	240	265		
Greenville, Spartanburg, Seneca and Central, S. C.....	250	250	275	325	350	375		
Augusta, Ga.....	125	125	150	200	250	275		
Per 100 lbs. in cents:								
Macon or Milledgeville.....	40	40	45	53	60	65		
Athens, Atlanta, Rome, Dalton or Chattanooga.....	45	45	50	58	65	70		
Atlanta & West Point local stations.....	90	90	65	73	80	85		
West Point or Opelika.....	60	60	65	73	80	85		
Montgomery or Selma.....	45	45	50	58	65	70		
Western & Atlantic local: Bolton to Tilton.....	57	57	62	70	77	82		
Smyrna to Calhoun 59	59	59	64	72	79	84		
Chickamauga to Adairsville.....	61	61	66	74	81	86		
Kingston to Atlanta.....	63	63	68	76	83	88		
Stegall to Cass.....	65	65	70	78	85	90		

These rates took effect Sept. 1, and will remain in force until further notice. The rates do not apply from Macon or Milledgeville to Brunswick, or from points above Augusta in the list to Port Royal.

Chicago Shipments Eastward.

Through shipments eastward by the six pooled lines for the week ending Aug. 28 were 32,850 tons, against 29,431 the previous week, and 33,808 in the corresponding week of last year, when the rates were the same as now. Of the shipments this year 3,038 tons were flour, 19,412 grain, and 10,400 provisions, three-fifths of the whole (the grain) thus being taken in competition with the lake vessels. Of the total shipments the Michigan Central had 22.4 per cent., the Lake Shore 27.5, the Fort Wayne 17.5, the Pan-handle 12.3, the Baltimore & Ohio 6.4, and the Grand Trunk 13.9 per cent.

Weighing Car-Load Freight.

In accordance with the request of the Western roads, the Trunk Line Executive Committee have given orders to have all car-load freight received from or delivered to their Western connections weighed and charged accordingly, and charges will be collected in the East on the full weight in cars, however billed, allowance being made for some contracts to carry at "estimated" weights made heretofore.

The Erie Canal.

The business of the canal at Buffalo from the opening to Aug. 31 is reported as follows:

	1880.	1879.	Increase.	P. c.
Boats cleared.....	6,540	4,180	2,360	56.5
Tons collected.....	\$457,499	\$276,781	\$80,718	29.0
Average per day.....	3,441	2,407	1,034	43.1

The canal opened April 20 this year and May 8 last year, giving 18 days more of navigation this year than last.

Georgia Railroad Commission Rates.

The Georgia Railroad Commission, on Aug. 13, issued the following circular:

Upon a full and careful consideration of the elaborate re-

ports of the Central Railroad & Banking Company, the Atlanta & Charlotte Air-Line Railway Company, and the Macon & Brunswick Railroad Company, showing the effect of the rates authorized by the Commission on their business for May and June, 1879 and 1880, the following changes are made in the relations of these companies to the standard tariff.

The Central Railroad & Banking Company.—First. The Central Railroad & Banking Company is authorized to operate their railroads in the following divisions: The Savannah; the Southwestern Railroad; the Atlanta; the Savannah, Griffin & North Alabama Railroad.

Second. On the Savannah and the Southwestern Railroad Division and the Savannah, Griffin & North Alabama Railroad, upon all classes other than "specials," the maximum freight rates between 0 and 40 miles to be 50 per cent. on standard rates; between 40 and 70 miles, 40 per cent.; between 70 and 100 miles, 30 per cent.; and 100 miles and over, 20 per cent., as heretofore fixed.

Third. Upon the Atlanta Division, on all classes other than "specials," the maximum rates to be 30 per cent. over "standard."

Fourth. Upon cotton (class J) the maximum on either division or on Savannah, Griffin & North Alabama Railroad, for all distances, shall be 15 per cent. above "standard." All other "specials" (K, L, M, N, O and P) remain at standard.

Fifth. A tariff of joint rates on all the roads operated by the Central Railroad & Banking Company, prepared with the approval of the Commission, will be furnished by the company on application.

This order in effect permits the Central Company to treat the different divisions of its line as separate roads. A hearing was had in Atlanta, Aug. 24, at which representatives of the Central and from Macon advocated a continuance of the order, while others from various points on the road opposed it. The Commission finally adjourned until Aug. 31 to hear special arguments on some legal points involved.

THE SCRAP HEAP.

Railroad Equipment Notes.

The Taylor Iron Works, at High Bridge, N. J., are furnishing a large lot of wheels and axles to the Lehigh Car & Manufacturing Company.

The Mt. Clare shops of the Baltimore & Ohio road in Baltimore have 10 handsome passenger cars nearly finished.

Fleming & Sons, at St. John, N. B., are building nine Mogul freight engines for the Intercolonial Railway. The first one is nearly finished.

The Susquehanna shops of the New York, Lake Erie & Western road are building several standard-gauge freight engines for the road. A new shifting engine has just been finished.

The Marshall Car & Foundry Co., at Marshall, Tex., turned out its first car on Aug. 21.

Mengi & Co., of No. 32 Pine street, New York, railroad commission merchants, report that they have recently placed orders for freight cars as follows: 500 to the Lebanon Manufacturing Co., and 500 to W. C. Allison & Co., for the New Orleans Pacific; 500 to the Lebanon Manufacturing Co., and 500 to the Lehigh Car & Manufacturing Co., for the Missouri Pacific; 200 to W. C. Allison & Co., and 200 to the Cleveland Bridge & Car Works for the Texas & Pacific.

The Effingham shops of the Vandalia Line have just turned out a new passenger engine.

Iron and Manufacturing Notes.

Alice Furnace, near Ironton, O., is running steadily and making nearly 400 tons of pig iron a week.

The Central Pacific Company has begun to build a rolling mill in Sacramento, Cal., which is thus described: The building will be 80 by 180 ft., with a lean-to addition for boiler house, etc., 20 ft. wide and running the entire length. This will make the building 100 by 180 ft. The posts or sides of the building will be 30 ft. in height, and the bridge 53 ft. from the ground. The roof will be of corrugated iron, and have an area of over 22,000 square feet. The engine being constructed at the shops for these works will be of 800 horse-power. It will be a vertical engine, with cylinders 32 in. in diameter and 36-in. stroke. It is expected there will be six furnaces, with a boiler for each, to run the engine and the immense steam hammer, which will weigh about 10,000 pounds. The anvil-block, or bed upon which it is to play, will weigh about 25 tons. A crane for use at the hammer will be of sufficient strength to carry from 25 to 30 tons. It is not yet determined whether this will be operated by hydraulic power or other method. The purpose of the rolling mills is to eventually manufacture everything in the line of iron and steel used by the railroad company.

Mt. Vernon Furnace, near Ironton, O., went into blast recently and is doing well.

The new steel mill of Andrew Kloman, in Pittsburgh, will be 64 ft. long and 85 ft. wide, with a wing at each end 60 by 120 ft., and one in the centre 120 by 120 ft. It will have a 21-in. rail train, two "Universal" mills, a 16-in. bar train and a muck train, besides steam hammers and other necessary machinery. The rail train will be run on steel furnished by the new Pittsburgh Bessemer Steel Co. One "Universal" mill and four steam hammers will be used in making Kloman patent solid eye-bars. The mill will make about 50,000 tons of steel rails and 20,000 tons of beams, bridge steel, etc., per year.

The Ontario Rolling Mill Co., at Hamilton, Ont., recently elected R. Brown, President; S. A. Fuller, Vice-President; C. S. Wilcox, Secretary; A. M. Wilcox, Treasurer. Messrs. P. M. Hitchcock and C. E. Doolittle will hereafter have charge of the sales department.

The Indianapolis Rolling Mill is making new iron rails for the Indianapolis, Peru & Chicago, and the Iron Mountain & Helena roads. A large contract for the Lake Erie, Evansville & Southwestern has just been closed.

A Chair Car for Commuters.

A rather novel experiment which is being made on the Eastern Railroad this season is the running of a special chair car between Boston and Gloucester, for the accommodation of business men who go in every morning and out every evening. It contains 45 chairs, which are sold for the season for \$36 each, being the same as charged for the season passage ticket. These are for the season the exclusive property of the purchaser. The experiment has proved very popular, all the chairs having been sold early in the season. The car is not an expensive one, but is built with most sensible regard for comfort and cheerful effect, and is unquestionably a good investment.—National Car-Builder.

The experiment was, we believe, tried once before on the New York, New Haven & Hartford road. It was said to be successful at the time, but we do not know whether the car is still running or not.

Killed by a Bridge.

A dispatch from Lowell, Mass., Aug. 28, says: "Last evening five young men residing in this city, who had been attending the Caledonian picnic at Andover, took the train for this city. Either for lack of money or for sport, they clambered to the top of a passenger car. When the train reached Sprague's Bridge two miles from this city, all five were swept off and killed."

"At the time it was only known that one had met death in this manner. This was John Shinnick, aged 16. He was thrown down between the cars on the platform, where the conductor found him. He lived about 20 minutes. His body was brought here and identified. Some time later a trackman found the bodies of the others lying in ditches, three on one side of the track and one on the other. A freight train was sent from here, and brought them in about midnight."

"They were: William Maher, aged 15; John McNamara, aged 16; Timothy Nolan, aged 17; Patrick Ryan, aged 15. There is a space of 22 inches between the cars and the bridge, therefore, it is conjectured, the lads were sitting up when they struck. Probably all but Shinnick died almost instantly, as their wounds on the head and back were terrible. The undertaker's rooms where the bodies lie have been thronged to-day."

OLD AND NEW ROADS.

Bangor & Portland.—Mr. E. Miller, President of this Company, informs us that the road was completed Jan. 1 last, and commenced then to carry freight, taking about 125 cars of slate per month, besides considerable other freight. It connects at Portland, Pa., with the Delaware, Lackawanna & Western road, and runs thence eight miles to Bangor, the centre of the largest slate-quarries in the United States. The location and all other arrangements have been made for an extension of seven miles to Fenargyl, to another lot of slate-quarries. The company expects to have the grading of this extension finished this fall, so as to have the iron laid and the road ready for business early in the spring.

Boston & Albany.—At a meeting held Aug. 26 the board voted to reduce the rates charged for season tickets 20 per cent., and to make rates for all long-distance tickets 2 cents per mile. These reductions have been under discussion for some time.

At the same meeting the location of the new passenger station in Boston was finally decided upon. A plan was presented, according to which it was proposed to build the station on South street, directly opposite the Old Colony depot, but this was rejected on the ground that the holders of the real estate between the two roads had combined to ask exorbitant prices for their property, and that to build at that point would necessitate an additional expense of \$300,000. Such a location would also be attended by many disadvantages in the matter of handling freight. It was accordingly decided after some discussion to build upon the ground already prepared for the building, and contracts will be given out at once.

It was suggested at the meeting that the present station will ultimately be the terminus of all the local travel for 30 miles out of the city, and that a new and elegant station for the through trains would be erected in the near future at some point on Back Bay.

Boston & Maine.—The work of extending the second track on this road has been vigorously pushed this season. It is now complete from Portland to Scarborough, seven miles, and from Boston to Exeter, 51 miles, or over just half the road. The new track laid this season is the seven miles on the Portland end and 18 miles from Haverhill to Exeter on the Boston end of the road.

Burlington, Peoria & Toledo.—It is announced that this company is to be organized at once for the purpose of building a railroad from Peoria, Ill., by way of Logansport, LaFayette, Ft. Wayne and Defiance—that is, parallel and close to the Toledo, Peoria & Warsaw and Wabash lines—to Toledo, O. The parties who are incorporators of the new company are all heavy stockholders or officers of the Chicago, Burlington & Quincy Company, and the movement is directly in the interest of that company. The new road will be about 360 miles long and will be, as stated above, everywhere close alongside of the Wabash lines. The projectors of the line state that it has been made necessary as a protection against further Wabash intrusions into their territory, and also in retaliation for the competition forced upon them by that line. It is given out that the line will be built at once, work to be begun as soon as the location can be made.

Canadian Pacific.—A Montreal dispatch says: "Private cablegrams received here from London say McDonald's scheme for handing over the Canadian Pacific to a syndicate is complete except some minor details, which are being arranged. There were two powerful syndicates competing for the line. One was headed by Sir Hugh Allan. With him were Baring Bros., Lords Dunraven, Dunmore, Strathmore and several English railway magnates, while the other was composed of George Stephen, President of the Bank of Montreal, and R. B. Angus, his co-director in the St. Paul, Minneapolis & Manitoba Railway, backed by American capitalists. The latest news is that Sir Hugh Allan's firm have triumphed, but it is likely there will be an amalgamation of syndicates."

Canada Southern.—Some time ago the International Bridge Company filed a bill in the Canada Court of Chancery to compel the payment by this company of tolls for the use of the bridge, amounting to about \$100,000. The Canada Southern Company filed an answer, in which it was claimed that the tolls were excessive; that the Bridge Company had no power to impose them; that the Grand Trunk Company is lessee of the bridge, and that the charges were made wholly in the interest of that railway. A judgment has now been rendered in favor of the plaintiffs. The Court holds that they are entitled to the decree as prayed for, with costs. If parties agree upon the amount due it is to be inserted in the decree. If not, there will be a reference directed to the Master to take the account on the basis of the schedule of tolls, with the modification by way of rebate which the Bridge Company has agreed to make.

Judgment was also delivered in the cross-case of the Canada Southern Railway vs. The Bridge Company, the Grand Trunk Railway and the Attorney-General of Ontario. The bill in this case was based upon the proposition that the Bridge Company is only entitled to a reasonable remuneration for the use of the bridge, and charged that they had never been able to come to an agreement as to the amount of compensation to be paid for its use. It was further charged that neither the Bridge Company nor the Grand Trunk has ever lawfully fixed the rate of tolls, and have no power to do so; that the Canada Southern uses the bridge, as it has the right to do under the statutes, subject only to such compensation as could be legally claimed. The Court was asked to declare that it was entitled to the use of the bridge and to be protected in the exercise thereof. The evidence in this case was the same as that taken in the former, and both cases were argued together several weeks ago. The bill of the Canada Southern was dismissed with costs.

Carson & Colorado.—The grading for this road near Virginia, Mo., is completed and tracklaying will soon be begun. The work on the bridges over Carson and Walker rivers is in progress.

Central & Montgomery.—It is proposed to extend this road from Navasota, Tex., southwest to Brenham, about 30 miles. Meetings are being held along the proposed line and subscriptions are called for.

Chicago, Burlington & Quincy.—The bridge over the Missouri River at Plattsmouth is finished, and was to be opened for business this week. It gives the company an unbroken connection under its own control between its Iowa and Nebraska lines. The bridge itself is about 3,000 ft. long; the east approach is two miles long, and the west approach about a mile, so that the connection required 3½ miles of new track. A full description of the work was published on page 346 of this volume. The bridge is located about a mile below the city of Plattsmouth.

The officers of the company have furnished the following statements to the *Commercial and Financial Chronicle*, in answer to questions:

"1. The Burlington & Missouri River Railroad in Nebraska was consolidated with the Chicago, Burlington & Quincy as of date Jan. 1, 1890, by an assignment of all its property and franchises. The Chicago, Burlington & Quincy Railroad was to make a dividend to its shareholders of 20 per cent. in stock and 1½ per cent. in cash out of the surplus earnings of 1879. Then, dating from May 21, the Chicago, Burlington & Quincy purchased the Burlington & Missouri in Nebraska stock (89,543 shares) and the Republican Valley stock (8,530 shares) entitled by contract to equal advantages, at 120 with its own stock at par—that is, giving six shares for five. The first quarterly dividend on the total of stock thus formed was 2 per cent. on June 15. The Chicago, Burlington & Quincy further agreed to purchase 15,650 shares of Republican Valley Railroad deferred stock, carrying no dividends, whether regular or extra, till Jan. 1, 1885, at which time the Chicago, Burlington & Quincy is to give its own stock in exchange, share for share, to be entitled to all subsequent dividends.

"2. The Atchison & Nebraska Railroad passed to the Burlington & Missouri in Nebraska by permanent lease, dated Jan. 1, 1880, ceding all its lands, money, bonds, rights of action and property of every description in return for the assumption of its debts and liabilities. The Burlington & Missouri agrees:

"(1) To keep the road in good repair and well equipped.
"(2) To pay all taxes and assessments and principal and interest of \$1,125,000 of mortgage bonds due 1908.

"(3) To give 4 per cent. bonds of the Burlington & Missouri in Nebraska, due 1910, for the par value of the Atchison & Nebraska capital stock, \$3,347,000, and to pay to the New England Trust Company June 1 and Dec. 1 of every year—till the bonds are all paid and canceled—1 per cent., or \$33,470; said sum to be invested in said bonds if to be bought at par or under, and if not, then in such securities as the New England Trust Company may determine. The Chicago, Burlington & Quincy Railroad, as the successor of the Burlington & Missouri in Nebraska, assumes its contracts with the Atchison & Nebraska."

Chicago, Clinton, Dubuque & Minnesota.—At a recent meeting the stockholders voted to approve the action of the board in purchasing the Chicago, Bellevue, Cascade & Western Road, a narrow-gauge feeder in Iowa. They also approved the sale of their property to the Chicago, Milwaukee & St. Paul Company, on the terms heretofore noted, under which they are to receive 6 per cent. bonds of that company in exchange for their stock. This completes the legal action necessary to the transfer of the road to the St. Paul Company.

Chicago & Eastern Illinois.—It is said that the rails are being taken up from a section on the northern end of the Indiana division. This section was badly located and very imperfectly built, and has not been in use for some time.

Chicago & Northwestern.—In changing the route of its Des Moines & Minneapolis line to avoid some heavy grades, this company left the village of Polk City, Ia., formerly on the line, about two miles to the east of it. A spur was run up to the town, and a train put on running to connect with all trains on the main road. The Polk City people felt aggrieved, however, and have now begun suit to recover the aid voted by them to the road, with damages besides.

It is said that this company has offered to iron the projected Black river road from Merrillan, Wis., to Neillsville, 12 miles, provided the people on the line will grade it and provide the ties. The connection of the road with the Northwestern is over the Chicago, St. Paul, Minneapolis & Omaha road.

Chicago, Rock Island & Pacific.—This company will take no appeal from the decision of the Iowa Railroad Commission in the Lilliburn case, but will haul the refrigerator cars coming from the Toledo, Peoria & Warsaw as from a connecting road, in accordance with that decision.

Cincinnati, Hamilton & Dayton.—Cincinnati reports state that the plan of consolidating this company and the Cleveland, Columbus, Cincinnati & Indianapolis, which has been talked about for some time past, has been abandoned in consequence of the very strong opposition of the Cincinnati, Hamilton & Dayton stockholders. No steps had been taken toward completing a consolidation, but it has been discussed ever since the last annual meeting.

The report is revived that this company will build a cross-cut from Hamilton, O., east by south to Loveland on the Marietta & Cincinnati, about 18 miles. This is an old project, and would be of use chiefly in sending eastward business from the Indianapolis line, for which it would shorten the distance some 30 miles, besides avoiding the transfer in Cincinnati.

Cleveland, Canton, Coshocton & Strattsville.—Work has been begun on this road at Monroe, O., and it is said that its construction is to be pushed. The line is about 50 miles long, from Canton, O., the terminus of the Valley road, south by west to Coshocton on the Pittsburgh, Cincinnati & St. Louis, much of it being through a country rich in coal and iron ore. The road was projected and part of it graded several years ago.

Cleveland, Mt. Vernon & Delaware.—A dispatch from Akron, O., says that representatives of the Amsterdam bondholders are now arranging for the sale of this road under a foreclosure of the mortgage. It is their intention to buy it in when sold, and to complete the branch from Killbuck to Dresden, which is partly graded, and which will give the road a connection with the coal fields about Zanesville.

Cumberland & Ohio, Northern Division.—On this road, which is being built under agreement with the Louisville, Cincinnati & Lexington Company, track is now laid from Shelbyville, Ky., the terminus of the Shelbyville Branch of that road, southward to Norman's, 12 miles. Work is being pushed, and the line will soon be open to Taylorsville, five miles further.

Dan Valley & Yadkin River.—This company has been organized under charters from the legislatures of Virginia and North Carolina, to build a railroad from Danville, Va., southwest to a point on the projected line of the Cape Fear & Yadkin Valley road west of Greensboro, N. C. It will be about 50 miles long.

Danville & Southwestern.—A dispatch from Danville,

Ill., to the *Chicago Tribune* says: "The Danville & Southwestern for many years famous on account of its miserable road-bed and paucity of funds, has lately been doing a much better business. It is securing by the way of Cairo the shipment of Texas cattle destined for New York. The local traffic is also largely increasing. The road bed has been put in good condition, and some fine rolling-stock has been purchased. Under the patronage of the Wabash, St. Louis & Pacific and the Cairo & Vincennes, the road has prospects of doing a paying business."

Decatur, Springfield & Roodhouse.—This company has been organized to build a railroad from Decatur, Ill., west to Springfield and thence west by south to Roodhouse on the Chicago & Alton, about 85 miles in all. The 40 miles from Decatur to Springfield would be parallel and close to the Wabash road. The line is the projected extension of the Indianapolis, Decatur & Springfield, and, in connection with that road and the Chicago & Alton, would make a very direct line from Indianapolis to Kansas City. The corporations are the same as those of the Springfield, St. Louis & Louisville, noted elsewhere, though the two projects do not appear to have any necessary connection.

Denver & Rio Grande.—On Aug. 22 this company opened for business the first section of its San Juan Division, extending from the New Mexico Division at San Antonio, Col., 279 miles from Denver, westward to Boydville, 25 miles. This section includes some heavy work, and one "development" necessary to overcome a very heavy grade. Work is in progress on the extension of the New Mexico Division southward from its present terminus at Tres Piedras.

Des Moines, Adel & Western.—This new road, now open from Waukee, Ia., to Panora, 30 miles, is reported as doing a very large business for a new road. The company has been obliged to double the equipment at first thought sufficient.

Detroit, Butler & St. Louis.—The Indiana courts have dissolved the injunction granted to restrain this company from crossing the Lake Shore & Michigan Southern tracks in that state with its proposed road. There are still injunction cases pending against the crossing at Adrian, Mich., and also in Ohio, but it is thought that the Indiana decision will help in disposing of these suits.

East Line & Red River.—Work is progressing steadily on the extension of this road. The track is now laid for five miles west of the late terminus at Sulphur Springs, Tex., and the road is ready for the rails for some distance further.

Forest Park & Central.—The grading on this St. Louis suburban road is now completed from Rock Spring along the east and north side of Forest Park to Clayton. Work is now progressing beyond Clayton to Creve Coeur Lake and towards Howell's Ferry on the Missouri, 20 miles west of St. Charles. There is a rumor that the road is to cross the Missouri and run northwest to a connection with the Chicago & Alton's Kansas City line.

Frankfort & Kokomo.—As noted elsewhere, this road will hereafter be managed by the officers of the Lake Erie & Western road, and it will be worked as a branch of that road. It is understood that a controlling interest has been sold to parties who are large owners in the Lake Erie & Western. The road runs from Kokomo, Ind., to Frankfort, 27 miles.

Genesee Valley.—This company, which has been organized to build a railroad on the line of the Genesee Valley Canal, has executed its bond in the sum of \$700,000 to the state of New York, in accordance with the act of the Legislature granting the canal. The bond is conditioned on the compliance by the company with the terms of the act, and has been formally accepted by the Commissioners of the Canal Fund.

Grand Southern.—The contractors now have a considerable force at work putting down the rails. The track is laid from Carleton, N. B., westward nine miles, and ballasted for about half the distance. An additional force is to be put on shortly. Work is also in progress from the western end of the line.

Grand Trunk.—The following statement is issued in London by the Secretary, J. B. Renton:

"I am instructed to intimate that, subject to audit, the accounts for the half-year ended June 30 last show a surplus, after payment of the interest on all the pre-preference securities, of £122,670. The dividend on the first preference stock, which is payable Sept. 1 next, will absorb £80,374, leaving £42,296 to be carried forward to the next half-year; and this sum, subject, of course, to a sufficient amount being earned in the current half-year ending Dec. 31 next, to complete the full year's dividend on the first preference, will be applicable as dividend on the second preference stock."

Grinnell & Montezuma.—In spite of the failure of some towns to vote aid, this company has decided to build the extension from Grinnell, Ia., to State Centre, 28 miles. The track of the Central Iowa will be used for five miles north of Grinnell, and a contract for grading the 23 miles of new track from the junction with the Central northwest to State Centre has been let to M. Eaton, of Grinnell, who will begin work at once.

Gulf, Colorado & Santa Fe.—Track is now laid to the International & Great Northern crossing at Temple, Tex., 25 miles beyond the late terminus at Caldwell and 187 miles from Galveston. Work is progressing steadily toward Belton, about 40 miles beyond Temple.

Hannibal, St. Joseph & Chicago.—It was announced last week that work was to be begun at once on this projected new line from Quincy to Chicago. Later it was stated that operations were suspended to wait the result of negotiations with the Chicago, Burlington & Quincy. The basis of these negotiations was understood to be that the Chicago, Burlington & Quincy should abandon its proposed extension of the Burlington & Southwestern to Kansas City; that the Hannibal & St. Joseph should give up its line to Chicago, and that a new agreement for the interchange of traffic between the two roads should be made. Nothing definite had been made public, but it was understood that the negotiations were proceeding favorably. The latest reports, however, are that they have been broken off altogether, but this is very uncertain. There is also a report that the Hannibal & St. Joseph is negotiating with the Wabash for an agreement as to business over its Chicago line, but this also is uncertain.

Hudson Tunnel Railroad.—The caisson is finished and laid in position over the submerged shaft, and the work of sinking it was begun Aug. 30. It is uncertain how long it will take to get it down to the desired position; when that is done, work will be resumed on the compressed air plan, and a new effort made to clear out the tunnel and reach the bodies of the men lost there over six weeks ago.

Indiana, Bloomington & Western.—It is reported that the board of directors has under consideration the question of extending the road from Pekin, Ill., to Burlington, Ia., with a branch to Galesburg, in case the Chicago, Burlington & Quincy carries out its plan of building a line from Peoria to Toledo.

The company has been negotiating with the Wabash, St. Louis & Pacific for some agreement as to exchange of traffic with the Champaign, Havana & Western road, which lately passed into possession of the Wabash. Heretofore most of the business from that line has gone east over this road.

Lake Erie, Evansville & Southeastern.—The Evansville Local Trade Company, which owns this road, has bought the iron for its extension from Booneville, Ind., east 14 miles to a connection with the Cincinnati, Rockport & Southwestern road.

Lake Shore & Michigan Southern.—The following corrected statement of the business for the half year ending June 30 is published:

Gross earnings.....	\$9,072,215
Expenses (55.33 per cent.).....	5,019,344
Net earnings.....	\$4,052,871
Fixed charges—interest, rentals, etc.....	1,380,000
Surplus for dividend.....	\$2,672,871
Dividend, 4 per cent.....	\$1,978,000
Sinking fund.....	125,000
	2,103,000
Balance to income account.....	\$569,211

The audited figures are somewhat larger than those of the statement previously published, in which June earnings and expenses were partly estimated. The balance to income account was then given at \$505,340, or \$63,871 less than the actual result. This balance was equivalent to an additional 1.15 per cent. on the stock.

Manchester & Keene.—The trustees lately appointed by the New Hampshire Supreme Court have made a contract with the Connecticut River Railroad Company to operate the road, and trains began running Sept. 1. The road is 29½ miles long, from Keene, N. H., westward to Greenfield, where it connects with the Peterboro road.

Midland, of New Jersey.—Payment is now being made of the sums due the employees of the road at the time it was placed in possession of a receiver in 1875. Provision for these claims was made in the reorganization, and under the agreement the claimants receive 38 per cent. of their claims in cash and 52 per cent. in scrip of the new company, the remaining 10 per cent. being paid to the lawyers who had charge of the employees' interests.

Missouri, Iowa & Nebraska.—A dispatch from Chicago, Aug. 31, says: "Judge Burton, of Iowa, granted an injunction on Aug. 27, against the Missouri, Iowa & Nebraska Railroad Company issuing any more bonds for the extension of its road. Service was made on the company yesterday. This will block the extension of that line until Jan. 1, 1891, as, in any event, the injunction cannot be removed before that time."

Missouri, Kansas & Texas.—The track on the Denison Division is now laid to Kingston, Tex., 48 miles beyond Whiteright, and 17 from the late terminus at Leonard. Only eight miles remain to complete the road to Greenville.

New Castle & Franklin.—The following statement shows the operations of this road while in possession of W. C. Quincy, as Receiver, from July 1, 1879, to June 16, 1880, a period of 11½ months:

Gross earnings (\$1,849 per mile).....	\$70,277
Expenses (61.20 per cent.).....	43,026
Net earnings (\$717 per mile).....	\$27,251

These net earnings were about 4 per cent. on the funded debt, including overdue coupons.

New York, Lake Erie & Western.—This company has taken formal possession of the Buffalo & Southwestern road, under the lease lately concluded. It will be worked as a branch, and has been attached to the Western Division. Extensive improvements are to be made in the track and road-bed, and the road put in good order as fast as possible.

New York, Lackawanna & Western.—A meeting of the directors of this company, whose formation was noted last week, was held in New York, Aug. 27, when officers were chosen and the organization completed. The preliminary surveys were submitted and approved, and it was decided to begin work at Binghamton immediately. Nothing has been given out definitely as to the route, but it is understood to be considerably to the north of the Erie. Dansville is said to be a point, and the branch to Rochester is to start from that point. The directors assert that the road will certainly be built; that all the stock has already been subscribed for, and that contracts have already been made for rails and other materials.

Ohio & Mississippi.—The report of the Receiver, as filed with the United States Circuit Court, is as follows for July:

Balance, July 1.....	\$155,030.53
Receipts for the month.....	504,081.03
Total.....	\$659,111.56
Disbursements.....	407,496.19

Balance, Aug. 1.....\$161,615.37
The receipts exceeded the disbursements by \$36,584.84 for the month.

The Receiver, in pursuance of the recent order of the Court, has bought a large quantity of steel rails, of which 500 tons have already been delivered. They are to be laid on the Springfield Division at the points where renewals are most needed. Arrangements are also being made to build suitable passenger and freight stations in Springfield.

Pacific, of Missouri.—The stockholders of the old company lately began suit against the Atlantic & Pacific Company to recover a large sum out of which they claim to have been defrauded through the lease of the road and its subsequent foreclosure and sale. The suit was brought in the New York Supreme Court, and the defendants demurred to the jurisdiction of the court, on the ground that both parties were corporations of another state. A motion was made to dismiss the suit, but the Court decided to give the case to a referee to take testimony.

Quebec, Montreal, Ottawa & Occidental.—It is stated on good authority that a Montreal syndicate is negotiating with the Quebec provincial government for a lease of this road for a long term of years at a fixed yearly rental.

Richmond & Allegheny.—Track on this road has been laid into Richmond, Va., and is now complete from Richmond to Maiden's Adventure, 28 miles. The heavy work required below the Maiden's Adventure dam is nearly finished; as soon as it is done the road will be ready for the rails to Columbia, 29 miles.

Notice has been given that navigation on the James River

& Kanawha Canal will be closed on Sept. 4, for a distance of 27 miles from Richmond. The trains of the Richmond & Allegheny road will begin running one week later, on Sept. 11, and will connect at the terminus with regular lines of freight and passenger boats on the remaining portion of the canal to Lynchburg, Buchanan and Lexington.

St. Louis, Eldorado & Elizabethtown.—This company has filed articles of incorporation in Illinois to build a railroad from Elizabethtown in Hardin County on the Ohio River, north by east to Eldorado, the junction of the Belleville & Eldorado and the Shawneetown Branch of the St. Louis & Southeastern. The distance is about 28 miles.

St. Louis, Iron Mountain & Southern.—This company gives notice that it will pay on Oct. 12 next 7½ per cent. on its second-preferred income bonds, being 15 months' interest and closing up the interest on these bonds to Jan. 1, 1880.

St. Louis & Southeastern.—In the United States Circuit Court in Springfield, Ill., a final decree of foreclosure and sale was entered against the Illinois Division of this road. John A. Jones, of Springfield, and W. P. Fishback, of Indianapolis, masters in chancery, were appointed special commissioners to conduct the sale. It is understood that the road will be bought in by a committee in accordance with the agreement with the Louisville & Nashville Company.

Schuylkill & Lehigh.—This road, originally known as the Berks County, and afterwards as the Reading & Lehigh, has now the name given above, which is that of the organization formed by the purchasers at the late foreclosure sale. The road is now worked by the company, and is no longer leased to the Philadelphia & Reading. It extends from Reading, Pa., to Slattington, 43 miles.

Shenandoah Valley.—Trains now run to Milford, Va., four miles south by west from the late terminus at Bentonville, making 76 miles now in operation from Milford to Hagerstown, Md. Work is actively in progress from Milford southward, and from Waynesboro the Chesapeake & Ohio crossing, north, and the company hopes to have trains running from Hagerstown to Waynesboro, 142 miles, by the end of the year.

The latest time-table shows three passenger trains running over the road each way. Milford, the present terminus, is only 12 miles from Luray and its famous cave.

Springfield, St. Louis & Louisville.—This company has been organized to build a railroad from Springfield, Ill., south by east to Centralia, the junction of the Illinois Central's Chicago and North divisions, about 90 miles. From Centralia two branches are proposed, one southward to Murphysboro, about 55 miles, the other due west to East St. Louis, about 60 miles. The proposed lines would be everywhere near existing roads and some part of them through a country which hardly supports the lines it already has. The capital stock is fixed at \$2,000,000. The corporations are the same as those of the Decatur, Springfield & Roodhouse Company, noted elsewhere.

Tennessee & Sequatchie Valley.—This company has filed articles of incorporation in Tennessee to build a railroad on a line described as running "from the Tennessee River, near the mouth of Piney, in Rhea County, thence up Piney by Dickey's Landing, to intersect the Cincinnati Southern at some point between Spring City and Roddy's Landing, thence on to Walden's Ridge to Robinson's Gap, or some point between Piney and White's Creek, thence the most practicable route through Swaggerty's Cove into the Sequatchie Valley." The incorporators are E. D. Albright, Isaac Britton, Edward F. Roberts, N. H. Justice, J. J. Palmer, T. J. Britton and T. M. Storey.

Texas & Pacific.—A contract for grading the extension of the Transcontinental Division from Whitesboro to Denton, 33 miles, has been let to J. E. Hayden, of Pilot Point, Tex. The extension runs from Sherman due west to Whitesboro and then turns and runs a little west of south to Denton, where it will meet the Dallas & Wichita road.

Toledo, Delphos & Burlington.—A suit has been begun by Robert N. King in the United States Circuit Court in Indianapolis against H. R. Low, this company and others. The suit is to recover a balance of \$23,974, which Mr. King claims is due him as contractor for building what was then the Frankfort & State Line road. He seeks to attach and recover possession of the iron laid on 11 miles of the road.

Toledo & Milwaukee.—This company is securing subscriptions along its proposed line in Michigan. The town of Battle Creek has taken \$40,000 in stock.

Union Pacific.—The following statement, was recently made in regard to the Kansas Pacific consolidated bonds by the trustees, Jay Gould and Russell Sage: The amount of these bonds outstanding is \$12,155,000, issued to retire the following securities: \$1,500,000 funding 10s; \$1,086,436 first land-grant 7s; \$1,484,000 second land-grant 7s; \$202,000 Leavenworth Branch 7s; \$3,195,900 income 7s; \$1,045,000 Arkansas Valley 7s; \$1,784,000 Denver Pacific 7s; \$507,000 Boulder Valley 7s; \$127,185 certificates; a total of \$11,621,521.

In addition to the above, the trustees hold as part security for these bonds the following first mortgage bonds on the valuable branch lines of the company, with lands and land notes:

Junction City & Ft. Kearney, 7 per cent.	\$970,000
Solomon R. R., 7 per cent.	575,000
Salina & Southwestern, 7 per cent.	300,000
Golden, Boulder & Caribou, 7 per cent.	60,000
National Land Co. stock	94,800
Land notes for lands sold	1,743,000
Land, 3,000,000 acres, valued at \$4.00 per acre, average of last year's sales	13,800,000
Total	\$17,542,800

These assets are pledged exclusively for the payment of the \$12,155,000 bonds now outstanding. The proceeds of the land sales and other lands as sold and the income on the first mortgage constitute a sinking fund to be used to retire and cancel the bonds. The bonds must be bought for this purpose in the market at the best attainable price. In addition to the foregoing, these bonds are a mortgage on the entire road and rolling stock of the Kansas Pacific Railway, their payment—principal and interest—being assumed by the consolidated Union Pacific.

Wabash, St. Louis & Pacific.—It is reported that this company has decided to issue \$1,500,000 of additional stock, in accordance with the agreement made in purchasing some of its western connections, whose stockholders had the option of taking stock.

The new yards at Danville, Ill., are nearly completed. The sidings there will soon be able to hold 1,000 freight cars.

Wisconsin Central.—It is announced that this company has concluded a new and permanent lease of the Milwaukee & Northern road. It has been reported that both the Chicago & Northwestern and the Chicago, Milwaukee & St. Paul were desirous of securing the Northern road, but it was of great importance to the Central to retain control of its outlet to Milwaukee, and that object has now been secured.

ANNUAL REPORTS.

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Ogdensburg & Lake Champlain.

This company owns a line from Ogdensburg, N. Y., to Rouse's Point, 123 miles. Its latest report is for the year ending March 31, 1880.

The equipment consists of 33 locomotives; 10 passenger, 3 smoking and baggage, and 3 baggage, mail and express cars; 781 box, 40 stock, 140 flat and 7 caboose cars; 5 service cars. There was an increase of 76 box cars, and a decrease of 10 stock and 58 flat cars.

The general account is as follows:

Common stock.....	\$3,077,000.00
Preferred stock.....	2,000,000.00
Total stock (\$41.615 per mile).....	\$5,077,000.00
Bonds (\$8.131 per mile).....	992,000.00
Unpaid dividends and coupons.....	323,120.00
Notes payable, unpaid vouchers.....	120,695.87
Total.....	\$6,512,815.87
Road and equipment (\$46,533 per mile).....	\$5,077,000.00
Sinking fund bonds.....	21,020.00
Central Vermont Co.....	392,000.00
Sundry accounts.....	36,056.77
Materials.....	101,746.83
Cash and receivables.....	21,514.22
Total.....	6,249,337.82

Excess of liabilities over assets..... \$263,478.05
The bonds outstanding are \$600,000 first mortgage and \$392,000 sinking fund bonds. The preferred stock carries 8 per cent. dividends, which are cumulative; dividends for two years are unpaid.

The traffic as reported was as follows:

Train mileage:	1879-80.	1878-79.	Inc. or Dec.	P. c.
Passenger.....	189,808	189,808		
Freight and other.....	321,641	321,641		
Total.....	511,449	511,449		
Tons freight carried.....	285,992	240,426	I. 45,566	19.0
Tonnage mileage.....	26,177,196	21,780,314	I. 4,396,882	20.2
Rate per ton per mile.....	130 cts.	145 cts.	D. 15 cts.	10.3
Bushels grain received at Ogdensburg.....	3,187,041	2,737,204	I. 449,837	16.4
Tons west-bound lake freight from Ogdensburg.....	23,541	22,222	I. 1,319	5.9

The Superintendent's report notes the use of 1,250 tons steel rails and 63,570 ties in renewals. A number of buildings received repairs, and several small bridges were renewed. About two-thirds of the Rouse's Point bridge has been renewed, and the rest will be rebuilt next winter. There are now 42.6 miles of the road laid with steel rails.

The earnings for the year were as follows:

	1879-80.	1878-79.	Inc. or Dec.	P. c.
Passengers.....	\$99,140.43	\$93,354.11	I. \$5,786.32	6.2
Freight.....	332,193.38	313,747.97	I. 18,445.41	5.9
Mail, express, etc.....	35,247.89	33,030.30	I. 2,217.59	6.7
Car service, balance.....	43,000.42	39,144.40	I. 3,856.02	12.4
Total.....	\$510,582.12	\$479,276.78	I. \$31,305.34	6.5
Expenses.....	378,223.28	388,869.50	D. 10,646.22	2.7

Net earnings..... \$132,358.84
Gross earn. per mile..... 4,185.10
Net "..... 1,084.90
Per cent. of exps..... 74.08
Interest on funded and floating debt was \$70,929.67; dividends accrued on preferred stock, \$160,000; old second mortgage bond and interest paid, \$3,451, making a total of \$234,380.67, or \$102,022.39 in excess of the net earnings. This deficit, added to a debit balance from previous year of \$161,455.06, makes a total debit of \$295,477.05 charged. The preferred stock dividends were not paid, however, the balance of net earnings after paying interest, amounting to \$61,428.61, being applied to pay off floating debt. Bills payable were reduced from \$217,380.80 to \$68,983.53 during the year.

The report of the President says: "In February last, application was made to the Legislature of the state of New York for its authorization to issue \$4,500,000 of the company's bonds, for purposes named. March 23, an act was passed giving such authorization, and, by a unanimous vote of over 28,000 shares, the stockholders, on May 4, assented to making the mortgage to William J. Averell and Stuyvesant Fish, trustees, and issuing of \$3,500,000 first consolidated mortgage and \$1,000,000 income bonds.

"The mortgage has been executed, and recorded in the counties of St. Lawrence, Franklin and Clinton. Of the bonds, all of the income (\$1,000,000) and \$2,371,000 of the first consolidated mortgage are to be retained to retire preferred stock, outstanding mortgage and sinking-fund bonds.

"The balance of first consolidated mortgage bonds (\$1,129,000) is to be applied to completing and relaying track with steel rails, building elevator, the purchase and building of cars, and such other purposes as the directors may from time to time direct. None of the bonds have as yet been offered to preferred stockholders, holders of outstanding bonds, or for sale to the public. It will be the duty of the new board to soon enter upon negotiations for the exchange and sale of these bonds.

"The traffic of the road since the commencement of the present fiscal year (April 1 to May 27, 1880 inclusive) has been satisfactory, showing, without any material increase of plant, the handsome gain, from freight and passengers alone, of \$24,000 in 49 days, or 50 per cent. Other sources of revenue will increase this gain.

"It is confidently expected that, with additional cars, a new elevator, reduction of cost of transportation from use of steel rails, and by the enlargement of the Welland Canal (to be effected in 1881), the traffic of the company will very largely increase, and that the earnings will be ample to meet all fixed charges of maintenance and interest."

Southern Pacific.

This company owns two distinct lines or systems, the Northern Division, consisting of a line from San Francisco to Soledad, 143 miles, with a branch from Camarero to Tres Pinos, 18 miles, and the Monterey Railroad (nominally leased but really owned), from Castroville to Monterey, 15 miles. This system of 176 miles is worked by the company directly, but the Monterey road was not completed until the close of the year. The Southern Division consists of a line from Goshen, Cal., to Yuma, Arizona, 489 miles, with branches from Goshen to Huron, 40 miles, and from Los Angeles to Wilmington, 22 miles, being 551 miles in all; this division is worked by the Central Pacific Company under lease. The two divisions are to be connected hereafter by a line from Soledad to Lerdo, 160 miles. The following statements have been published for the year ending Dec. 31, 1879.

The company has a land grant of 20 sections per mile, covering about 330 miles of road built or to be built. It also owns the Colorado Steam Navigation Company, whose lines run on the navigable waters of the Colorado River some 300 miles.

The equipment consists of 46 engines; 69 passenger and 12 baggage and mail cars; 581 box and 343 flat cars; 228 service cars. Of these 28 engines; 52 passenger and 10 baggage cars; 373 box and 191 flat cars, and 94 service cars are in use on the Northern Division, the rest being leased with the Southern Division:

The general balance is as follows:

Stock.....	\$36,763,900.00
Funded debt.....	29,186,000.00
Other liabilities.....	475,713.03
Balance of accounts.....	1,819,347.90
Total.....	\$68,244,961.02

Road and property..... \$66,804,710.54
Materials..... 122,805.62
Cash..... 133,980.73
Current accounts..... 443,097.55
Profit and loss..... 740,366.58
Total..... \$68,244,961.02

The stock and funded debt remained unchanged during the year. All the bonds are first-mortgage 6 per cent. bonds, and are further secured by a trust under which all receipts from the land grant are applied for the redemption of bonds. The company is responsible as guarantor for \$236,000 bonds of the Market Street Railroad in San Francisco.

The traffic of the Northern Division (161 miles) for the year was as follows:

Train mileage, passenger.....	305,763
Freight.....	137,647

Total.....	443,410
Total locomotive mileage.....	570,332
Average miles per engine.....	20,369
Passengers carried.....	413,653
Passenger mileage.....	13,339,712
Tons freight carried.....	180,331
Tonnage mileage.....	11,613,297
Average passenger-train load, number.....	43.63
Average freight-train load, tons.....	84.37

This division has a very considerable local and suburban business out of San Francisco. In summer it also has a good deal of travel to pleasure resorts on the line; this was expected to be largely increased this year by the opening of the Monterey road, in connection with which the company has built a large hotel at Monterey, and made other arrangements for promoting summer travel.

The earnings, etc., of the Northern Division, with the general income account, were as follows:

Passengers.....	\$411,361.14
Freight.....	427,002.06
Mail and express.....	25,709.10
Total (\$5,384.86 per mile).....	\$863,062.30
Expenses (61.20 per cent.).....	526,565.35
Net earnings (\$2,120.48 per mile).....	\$336,496.95
Rental of Southern Division.....	1,659,819.76
Total.....	\$1,996,316.71

Payments for interest..... \$1,751,160.00
Payments on other accounts..... 360,246.46
Total..... 2,117,406.46

Excess of payments..... \$119,089.75

The net receipts were considerably in excess of interest charges. For the previous year the report was made in a somewhat different form. The net earnings for that year were \$2,155,704.03, showing a decline in net receipts last year of \$157,987.32, or 7.3 per cent.

East Line & Red River.

This company owns a line of 3 feet gauge from Jefferson, Tex., westward to Sulphur Springs, 93 miles. The following brief statement is made for the year ending April 30, 1880:

Gross earnings (\$1,321.85 per mile).....	\$122,931.95
Expenses (36.62 per cent.).....	45,016.09

Net earnings (\$837.80 per mile)..... \$77,915.86

The proportion of expenses to earnings was very small. The road does entirely a local business. It runs between the two lines of the Texas & Pacific, and has been built chiefly by local capital. An extension from Sulphur Springs westward is now in progress.